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Number 5.

NOVEMBER, 1902.

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"English Mills and Mill Life as seen by an American Observer"—in this issue.

TABLE OF CONTENTS - - - Page 896
CLASSIFIED INDEX FOR BUYERS - Page 969

GUILD & LORD.
PUBLISHERS.

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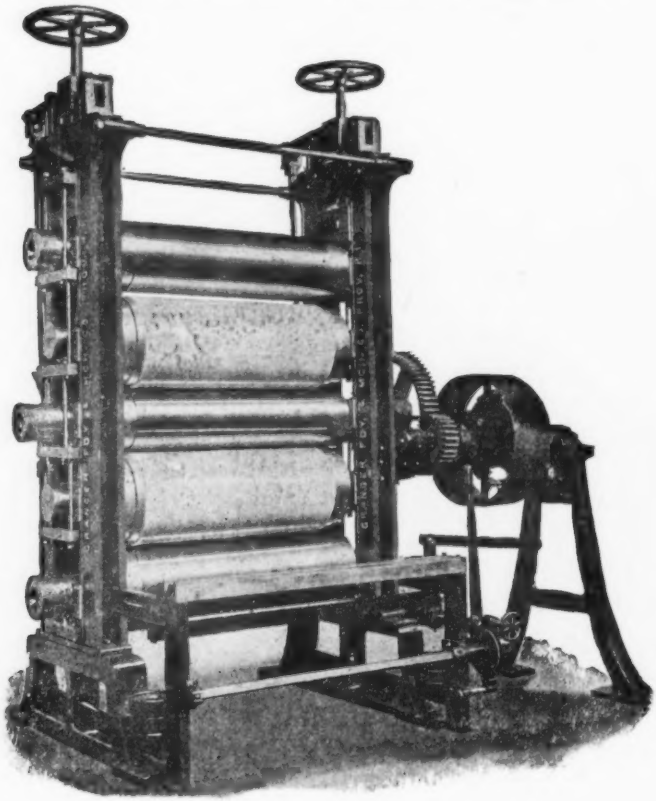
Bleaching, Dyeing, Drying,

And Finishing Machinery.



CALENDERS, MANGLES AND ROLLS.

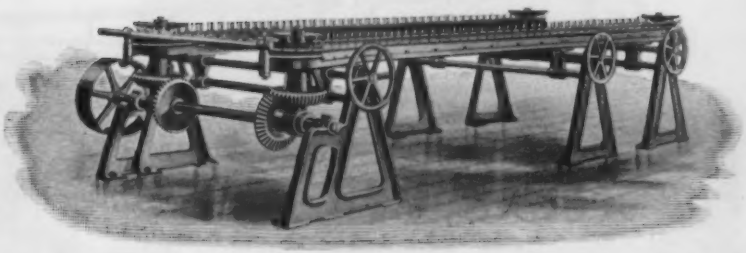
TENTERING MACHINES,
MERCERIZING MACHINES.

The Textile-Finishing Mchy. Co.

17 Exchange Place,
PROVIDENCE, R. I.

Bleaching, Printing, Dyeing and Finishing Machinery

For Textile Fabrics.



STRAIGHT TENTERING MACHINE, WITH AUTOMATIC CLAMP. (Patented.)

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RETURN (8, 10 or 12) returns **FOR WORSTED AND WOOLEN GOODS.**

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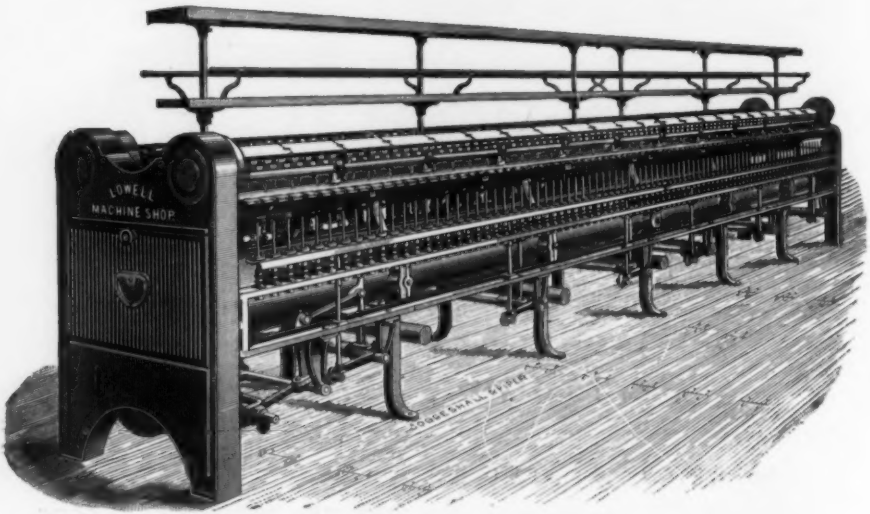
PHILADELPHIA, PA.

LOWELL MACHINE SHOP,

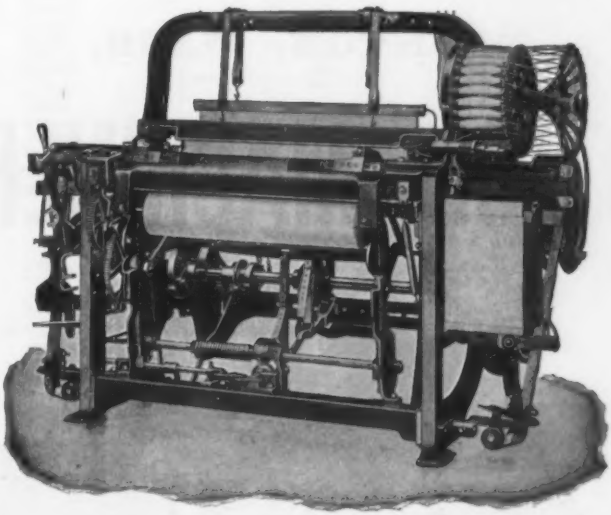
Lowell, Mass.,

COTTON MACHINERY.



Revolving Flat Cards,
Railway Heads,
Drawing Frames,
Roving Frames,
Ring Spinning Frames,
Twisters, Spoolers,
Warpers, Slashers,
Looms.

WORSTED MACHINERY.



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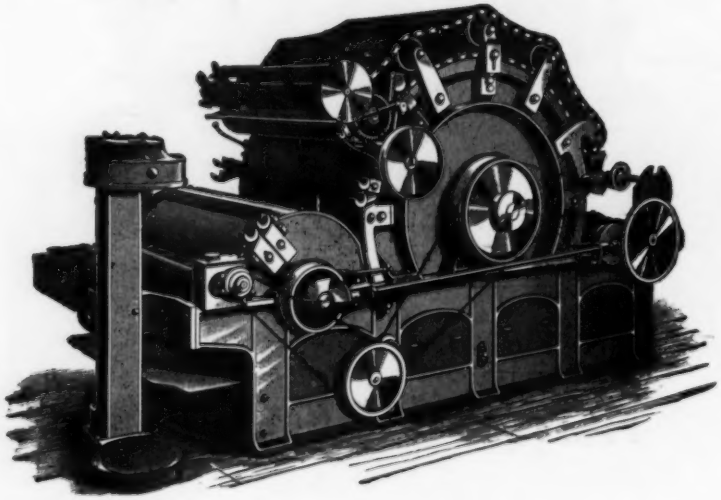
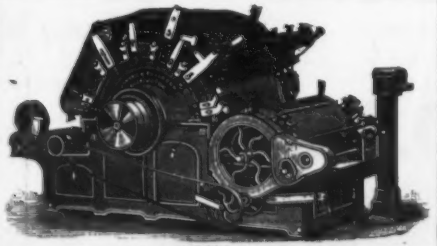


Cards, Combers, Lappers, Railway Heads, Drawing Frames, Spinning Frames, Mules and Looms,

INCLUDING

Plain and Fancy Silk Looms.

Southern Office, Charlotte, N. C.



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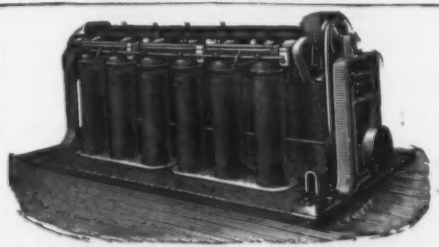

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Combined Self-Feeding Openers,

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All made from entirely new patterns and containing many valuable patented improvements.

Slubbing, Intermediate, and Roving Machines.

New patented Differential motion, New Arrangement of Cone Drums, New System of Balancing top or bobbin rail, etc.

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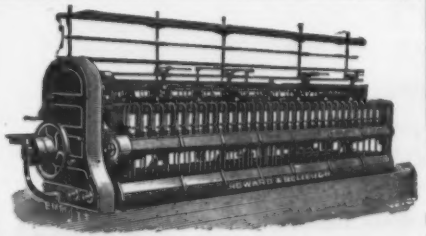
All parts of above machines are made by special tools and are exact duplicates.

We Invite Investigation and Comparison.



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Revolving Flat Carding Engines.

Sliver Lap Machines.

Ribbon Lap Machines

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Railway Heads.

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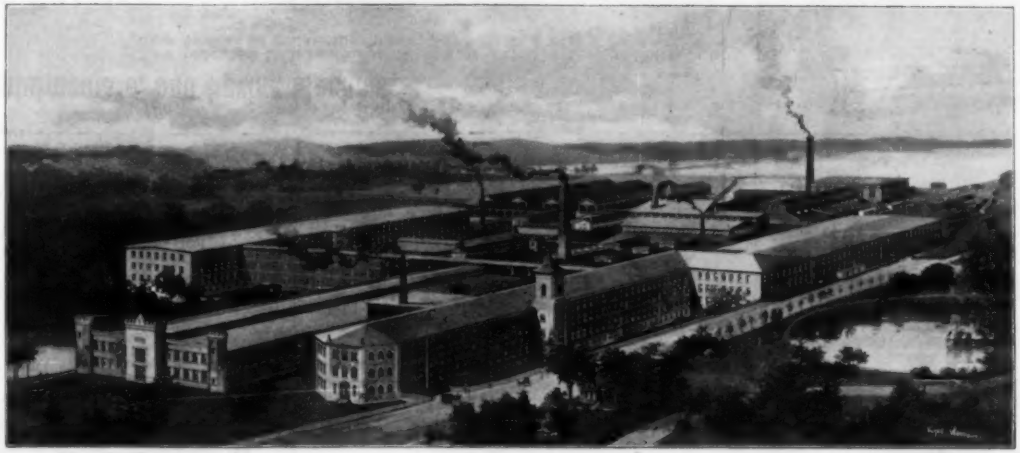

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Twisters.

Reels.

Long Chain Quilling Machines.

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In the Cotton Field nothing equals the
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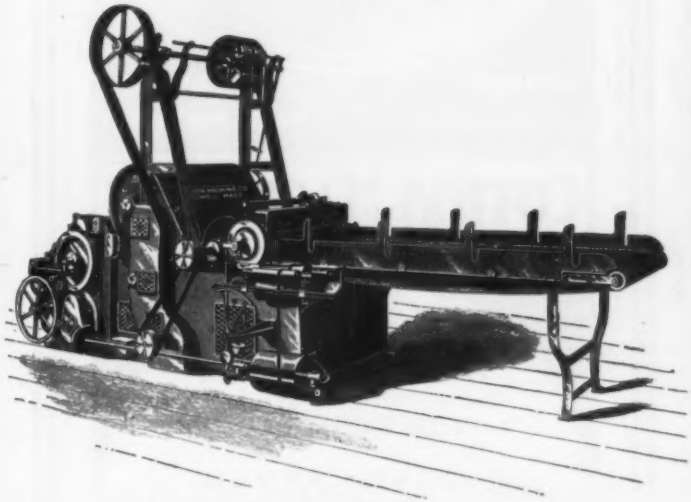

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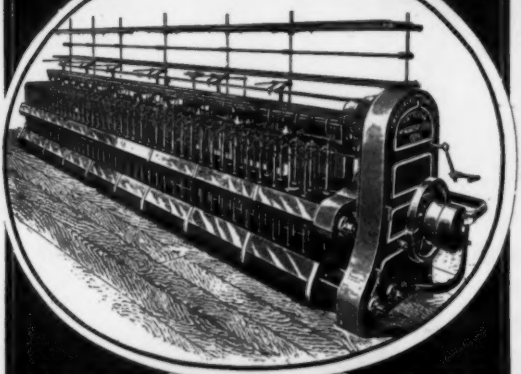

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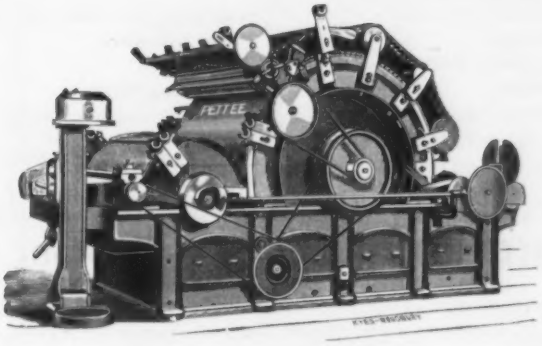

PICKERS, REVOLVING FLAT CARDS,

DRAWING FRAMES,

RAILWAY HEADS, SLUBBING,

INTERMEDIATE AND ROVING

FRAMES,

SPINNING FRAMES, SPOOLERS.

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Southern Agent: A. H. WASHBURN, Charlotte, N. C.

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With sensitive stop motions.

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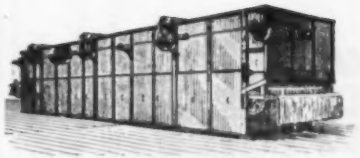

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For Hosiery, Underwear, Yarn, Cotton Stock, Wool, etc.

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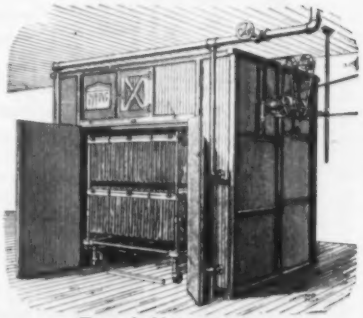

Truck Yarn Dryer.

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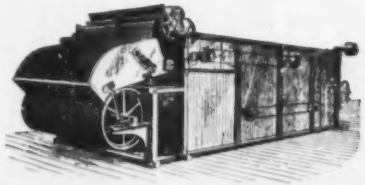

Automatic Cotton Stock Dryer.

GARNETT MACHINES

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—FOR—

WOOL, COTTON, HAIR, YARN, STOCKINGS, UNDERWEAR, &c.

Automatic Stock Dryer for Cotton and Wool.

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Easily and quickly applied to fabrics of any weight.
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The machine does the whole thing.
It is cheap, serviceable and durable.

We also make a machine which

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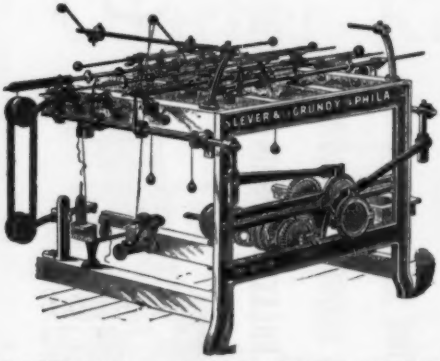

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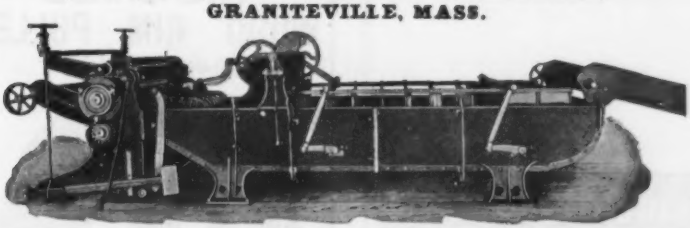

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BAR BELT DRESSING

Air

Hot, cold, wet or dry

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Write us for free sample, and tell us your belt troubles

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WOOD RIM PULLEY
With Iron Hubs and Arms.

Heavy Single Arm Pattern,

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Write for particulars in regard to our new machine for spinning heavy Cotton Yarn direct from Drawing Silver for Cotton Rope, etc.

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Manufacturers of
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Complete Power Transmission Equipments

FOR THE FACTORY, MILL OR
POWER HOUSE

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Our facilities are the largest in the world in this exclusive line of manufacture, with equipment thoroughly modern, thereby enabling the execution of orders to meet any requirement.

Our line embraces every good thing in Power Transmitting Appliances. Constant improvement is our watchword, with the abstract fact always kept in view of securing the reduction of fractional losses to the minimum in these devices.

An experience of twenty-three years has taught us how to secure the maximum from the minimum—that is, the maximum of effective power transmitted from the minimum of coal pile energy, a fact we shall be pleased to demonstrate.

We originated the "Independence" Wood Split Pulley, now universally used the world over. We were also the pioneer manufacturers and patentees of the "Dodge" American System of Manila Rope Transmission—acknowledged as the most economical and modern means of transmitting and distributing power. We have installed thousands of these drives.

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The Stirrup is always in place.

No bent stirrup resting on rolls.

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Also Steel Caps, Bolsters, Steps, Tubes, etc.

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WIRE HEDDLES.
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Sews any fabric, wet or dry, thin or thick, fine stitch or coarse stitch.
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We are so confident that this is absolutely the best and most economical power belting to use that we will gladly send trial belt for testing on your own machinery. All you have to do is write us for it, and you are under no obligation to keep it unless it's absolutely satisfactory in every respect.

Write us to-day for belting facts. We have been making old fashioned oak tanned belting for 50 years, and want you to know our belting. It will be money in your pocket. Please mention "Textile World."

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DOUBLE RIBBED RINGS, U.S. STANDARD TRAVELER CLEANERS, METALLIC BURNISH LIKE THAT PRODUCED BY THE TRAVELER.

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SPINNING AND TWISTING TRAVELERS
OF EVERY DESCRIPTION.
PROVIDENCE, - - R. I.
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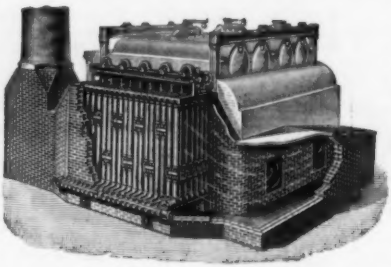
GREEN'S ECONOMIZER



to keep the coal expenses reduced to the minimum, by keeping the feed-water heated to the boiling point, using waste gases only -- also heats the entire *Mill* or *Factory* without additional cost.

Your competitor has one in his Boiler room—he is not worrying—the remedy is in your hands. Explanatory booklet showing a saving of 10 to 20% free—ask for Green's Economizer."

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SUCCESSORS TO ATLAS MFG. CO.

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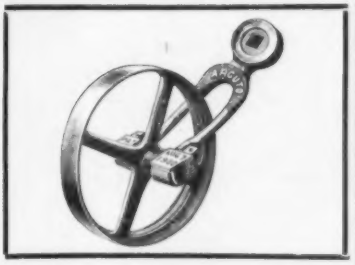

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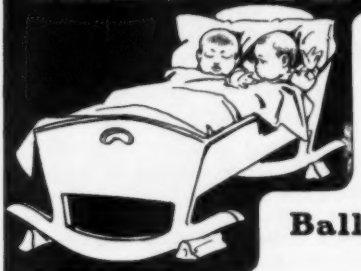

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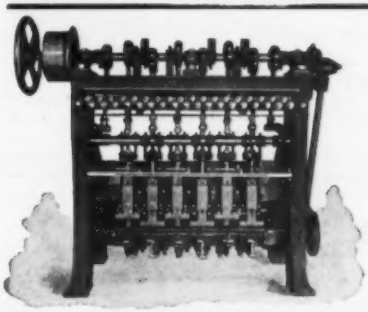

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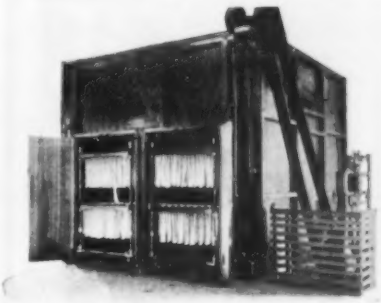

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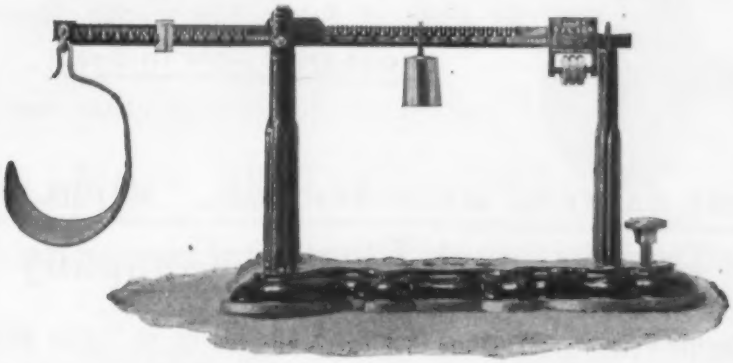

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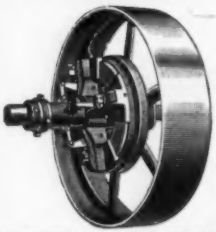

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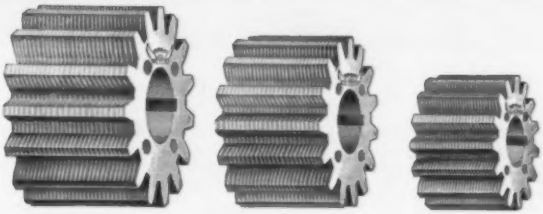

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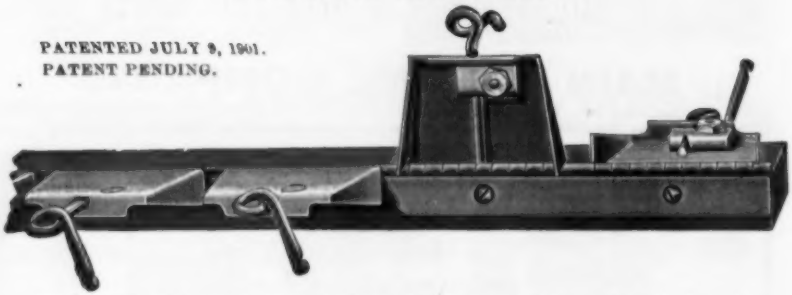

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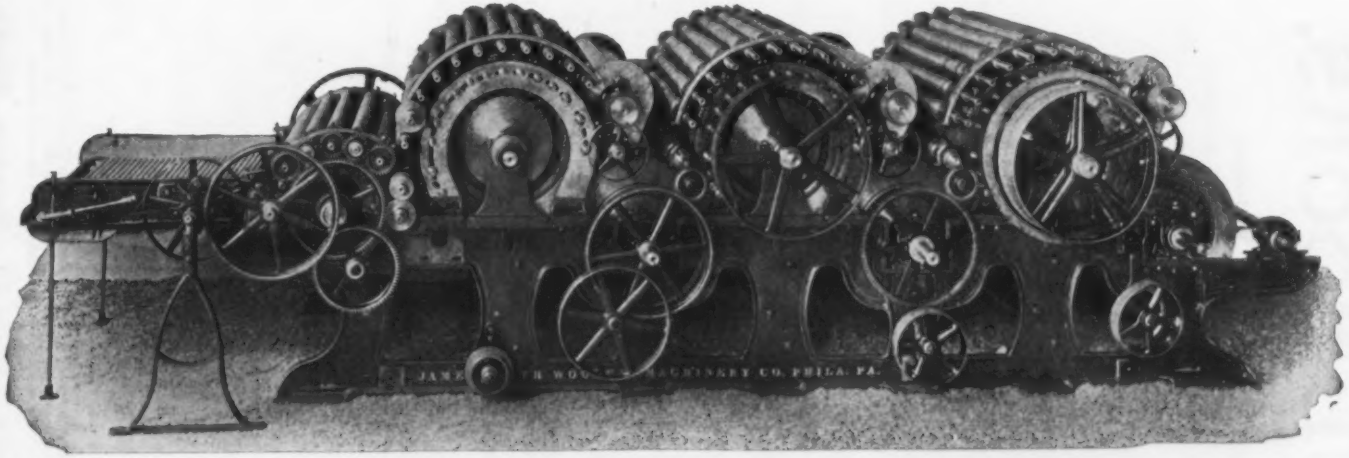

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CONTENTS.

	PAGE
Portrait and Biographical Sketch of Walter D. Middleton	875
Monthly Comment	875
Mills and Mill Life in England	879
Seasonable Fabrics	881
Knit Goods Situation	884
Cotton Industry Through European Spectacles	885
The Trials of a Young Superintendent	887
A Guide to Knitting	889
Textile Conditions in England	896
Finishing Wool and Mixed Fabrics	896
The Metric Problem	901
The Cotton Goods Trade of Manchuria	910
A Percentage Scale	911
The Waste Silk Industry	912
New Heddle Frame	914
A Guide to Weaving	915
A Loom Fixer's Knife	918
Humidity in Worsted Spinning	918
Making Weavers' Drafts	919
A New Fabric	920
Memoirs of a Veteran Master Mechanic	922
Treating Waste Fibrous Material	925
Method of Making Figured Pile Fabrics	926
A Knitted Fleece Fabric	927
The Passing of the Paste Brush	928
Ring Spinning on Cops	930
A Stop Motion for Knitting Machines	931
Increasing the Lustre of Silk	933
A Doffing Device for Cap Frames	934
New Machinery and Processes	936
Dyeing Department: Dye Recipes—Frame for Indigo Piece Dyeing—Dyeing Aniline Black—Prof. J. J. Hummel	938
Mill News	946
Personals	951
Questions and Answers	955
New Publications	957
New Color Cards	958
Business Literature	959
Industrial News	960
In and Out of the Mill	966

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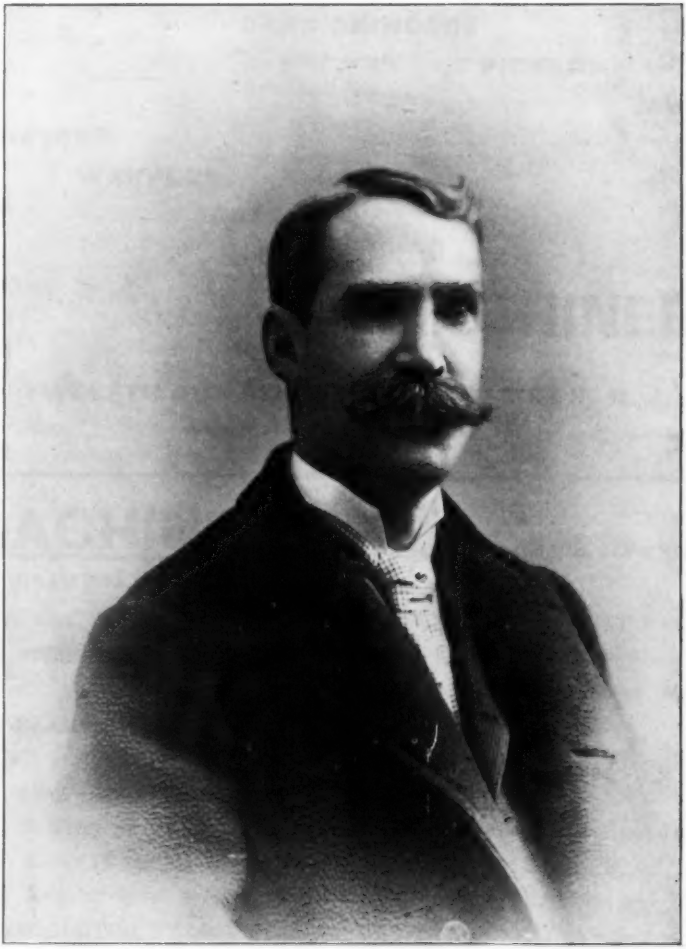

WALTER D. MIDDLETON

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WALTER D. MIDDLETON.

The subject of this sketch is the president and agent of the Globe Woolen Mills of Utica, N. Y., and is the only son of Robert and Lucy Ann Middleton. He was born in Dracut, Mass., Dec. 23, 1850. His father was a prominent manufacturer, well known in the woolen industry of the United States.

In May, 1857, he moved with his parents to Utica, where he has since lived. He received his education in the public schools there and in the commercial college. He also studied in the Eaglewood Military Academy at Perth Amboy, N. J., and at Edwards Place school at Stockbridge, Mass. He read law in the office of Edmunds & Miller in Utica, and was graduated from the law department of Hamilton College in 1873. In the same year he was admitted to the bar of the State of New York.

Mr. Middleton was not destined for a professional career, although he had fitted himself for one. His early environment brought him to close contact with important business interests and even before his admission to the bar he had become identified with the Globe Woolen Company, with which he has been actively connected for about thirty-two years.

Entering as a clerk and passing through the counting room and designing department, Mr. Middleton early gained a broad knowledge of the business, and under the able and intelligent instruction of his father, who had long been the president and agent of the mill, laid the foundation on which he has built a successful career.

The product of the mill is high grade cassimeres, beavers, meltons, worsteds, kerseys, etc. This company enjoys a reputation and trade thoroughly national in extent and eminently creditable in character. The mill contains thirty-one sets of cards, one hundred and eighty broad looms and eight combs, and is otherwise equipped with the latest and best appliances for the manufacture of fine woolen and worsted goods. The name "Globe" applied to a fabric is a synonym of excellence. The product was formerly sold by commission houses, but since January 1, 1864, the entire product has been sold from their salesroom in New York city.

Mr. Middleton has been for some time a director and vice-president of the company as well as the superintendent, and has filled these positions with characteristic ability and satisfaction. He applies himself closely to the details of the business, with which he is thoroughly familiar, and under his management the deservedly high reputation of the Globe goods is fully maintained.

MONTHLY COMMENT.

The Election. The November elections leave the administration of the government in the control of the friends of protection. The reduced majorities by which this has been brought about indicates a change in public sentiment, which will be variously interpreted.

The result, however, gives the party in power an opportunity to revise the tariff schedules on protective lines where revision is necessary. No political change is likely to place the en-

emies of protection in full control for at least four years, and the business of the country can continue undisturbed by the fear of tariff tinkering on free trade lines.

Philippine Trade. The January, 1902, report of cotton imports into the Philippines show that the United States still holds the lowest place with 2 per cent. of the value. The proportion supplied by each of the principal exporting countries and the United States is as follows:

Great Britain	46½ per cent.
Spain	13¾ per cent.
Germany	10¼ per cent.
France	2½ per cent.
All other	25 per cent.

A Textile Procession. A novel feature of the Preston Guild Merchant Trades Procession at Preston, Eng., was an exhibition of textile machinery on floats. They included both ancient and modern types of machines and the contrast between the two afforded a striking illustration of the progress made in the textile industry since the awakening it experienced over one hundred years ago from the inventions of Hargreaves, Arkwright, Cartwright and Crompton. The Textile Recorder of England publishes an elaborately illustrated description of the procession, in which we note the following exhibits:

Howard and Bullough, Accrington: Hopperbale breaker, beaming frame, mule head stock and ring frame.

Dobson and Barlow, Bolton: Revolving flat card, single nip comb, ring spinning frame and mule, all of model construction. In addition to these this firm exhibited the oldest mule in existence, being one of the two that Crompton made.

Platt Bros. & Co., Oldham: Macarthy cotton gin; Hopperbale breaker, scutcher; Arkwright old breaker and finisher carding engine, built about 1771 and used in the mill built by Arkwright at Cromford, Derbyshire; slubbing frame, ring frame and mule.

The Northrop loom was exhibited and naturally attracted much attention.

Light Needed. A fair sample of the ignorance that often passes for wisdom in the consideration of the moribund Grosvenor shoddy bill is found in the following extract from an article entitled "Is It Possible to Get Honest Woolens?" in a recent issue of the Michigan Farmer:

> The adulterants used now (in woolen goods) include not only shoddy waste, noils, and ordinary cotton, but also mercerized cotton, which so closely resembles wool as to deceive even close observers. Yet it cheapens and degrades pure wool, and makes the fabric much less valuable to the wearer because affording much less protection from the elements, and injuring the appearance of wearing apparel in which it is used when it becomes wet from rains or any other cause.

Not one strictly accurate statement in the above extract. Whether or not shoddy waste (sic), noils and ordinary cotton are adulterants of woolen goods depends altogether on the kind of wool and admixtures. In some goods the wool is the adulterant.

It will surprise many to learn that "mercerized cotton so closely resembles wool as to deceive even close observers." It is generally believed that mercerizing cotton makes it resemble silk. Of what kind of mercerizing and of what kind of wool is the Michigan Farmer a close observer?

It is equally surprising to learn that mercerized cotton makes a fabric of less value to the consumer. A directly opposite belief prevails in the textile industry, and is strengthened both by observation of mercerized and unmercerized cotton and by the readiness with which the consumer pays more for mercerized goods.

We commend to the Michigan Farmer this saying of a certain French philosopher: "The longer I live the more do I realize the importance of expressing an opinion only after learning; not before nor while learning, but after."

Technical School at Tourcoing, France. The United States consul, writing to the State Department under date of September 24, 1902, gives an account of the Technical School at Tourcoing. The course of instruction which is given to both day and evening classes is as follows:

Theory and practical work of spinning; weaving and pattern drawing (sketching and putting on cards); study of threads (distinctive character of textiles) and practical work; applied mechanics (technical working of metals, machinery); industrial physics; electro-technics; geometrical drawing applied to machines; commercial and bank accounts; commercial and industrial law; commerce and merchandise; stenography and typewriting. The studies in each branch extend over one year, except in weaving and pattern drawing; in these classes, a special course in decorative composition and creation of fabrics is given, occupying a second year. This course includes drawing from living plants, elements of water coloring, study of decoration in every century, character of styles, creation of designs applied to tissues, with preparation for examination as art workmen. The annual cost of the day course for French students is 300 francs ($57.90) for the spinning and commercial course and 400 francs ($77.20) for weaving. Foreigners pay double, and a reduction of 100 francs ($19.30) is made for pupils taking a double course, and 200 francs ($38.60) for those taking three courses. The night classes are organized for pupils living or working in one of the Tourcoing districts. A registration tax of 2 francs (39 cents) is required for the first year, 5 francs (97 cents) for the second with an additional payment of 3 francs (58 cents) for samples and sundries the first year in the theory class, 4 francs (77 cents) the second year, and 5 francs (97 cents) for the third. The registration tax for the course in electricity is 3 francs (58 cents) the first year and 5 francs (97 cents) the second. The course in conducting steam heaters is 2 francs (39 cents) registration tax and 1 franc (19.3 cents) for the course in machine drawing. The registration tax is required of pupils in the commerce classes independent of any other course they may take, which is 3 francs (58 cents) for stenography. Pupils not residing within the limits of Tourcoing pay a tax of 10 francs ($1.93) per month in addition to the cost of samples and sundries for the privilege of attending the night classes. Application for admission may be made to the director of the school, 66 rue du Casino, Tourcoing.

Exports to the Far East. The report that a steamer was being fitted upon the Pacific coast to carry a party of American manufacturers on a six months' cruise to the far East to introduce their goods, has startled even India with the idea of an American invasion. A writer in the Indian Textile Journal voices the alarm under the awe-inspiring caption, "The American Eye on India," and shouts to the Indian mill owners to wake up, for "the boogie-man will catch you, if you don't watch out."

While it is difficult to restrain amusement at the fright excited by the proposed excursion of a few Americans to Asia, the writer in his calmer moments sheds much light on the industries and commerce of India. In substance he states that the supremacy of England in the trade with India is due in great measure to her political position, but that as a matter of fact, her trade with her Indian possessions is slowly declining. It is inevitable, he says, that part at least, of this trade will be captured by America and Germany.

At the present time the American exports to India consist of petroleum and an inconsiderable quantity of cotton piece goods, mostly Pepperell drills, while in return a large quantity of jute gunny bags are exported to America.

The Indian writer states that the energy of the mill owners there has been at a standstill for years and that the lethargy has been increased by plague and famine.

We are inclined to believe that the danger of American competition with Indian cotton mills is altogether visionary. Wages are too high here and too low there to warrant any hope of success. The product of the Indian mills consists of the coarsest grade of goods made from the lowest grade of cotton by the poorest paid labor on

earth. The only way that Americans could capture such a trade would be to establish mills in India and utilize both the cheap cotton and the cheap labor. When that is done the American capital and enterprise become Indian.

Unless the industrial conditions of India have been greatly misstated American cotton manufacturers must content themselves with supplying as large a quantity as possible of the better grade of goods now sold to the East by their European rivals.

The Silk Industry of Lyons is enjoying a period of healthy prosperity, in which speculation and high prices play no part. The French designers have maintained the first place in the production of fashionable styles. The amount of silk passed through the French conditioning houses in 1901 was 15,124,228 lbs., an increase of 9.6 per cent. over the yearly average for the preceding decade.

Owing to the lower price of the raw material the value of the 1901 production of finished silks, $87,870,000, was $500,000 less than in 1900, although the weight of the raw material conditioned was 12 per cent. more than in 1900. The disadvantage of a low price for the finished product to the manufacturer finds its compensation in the large sales which have given steady employment to the mills and resulted in a material reduction in the cost of manufacturnig.

Cotton Cultivation. The report of the director-general of India on the raising of cotton in that country does not contain much encouragement for those who desire to see the practical monopoly destroyed that is now possessed by this country in the production of cotton. The area under cultivation in India last season, 1901-02, was slightly less than for the previous year, and the total weight of the crop (1,570,034 bales of 500 lbs. each) was 7 4/10 per cent. less than in the preceding year.

A Manual of Weave Construction.

The valuable treatise on weave construction by Ivo Kastanek will soon be issued in book form by the publishers of this magazine. Our readers can judge of its merits since we have published each month since July an instalment of the work. It contains over 500 illustrations, weave drafts and cloth patterns. The weaves are systematically classified and all unnecessary words are avoided in the descriptive matter. A valuable feature is the illustrations of cloth samples corresponding to the drafts; this enables the student to see at a glance the effect of any weave upon the cloth. The derivatives weaves selected for illustrations are those in current use.

The work can be recommended for schools, for self instruction in the composition of weaves, as well as for the expert. It is expected to be ready in December and will be sold for $1.50 per copy.

One of the most important manufacturing enterprises in Chili is the Chilian Mills Co., Ltd., at Chiguyanti, in the province of Concepcion, which began operations on July 7th last. The factory consists of a bleaching and dyeing works, and a manufacturing department with sixty looms. The plant is equipped with the latest processes for bleaching and dyeing, and the looms and all other machinery are of the most approved patterns.

Increasing interest is being taken in cotton cultivation in the Argentine Republic. One of the difficulties encountered is the absence of any home market for the product, and so the Minister of Agriculture proposes forwarding samples to Europe.

Statistics show that there has been a marked decrease in Great Britain's foreign trade in textile machinery, within recent date.

Mills and Mill Life in England.

BY AN AMERICAN OBSERVER FOR THE TEXTILE WORLD.

There have been deputations from England to America to study the conditions and prospects of American mills and the advantages which the employees in America have over their English competitors, and so much has been said and written on the subject of mill life in America, that it will no doubt be of interest to the readers of the Textile World to hear something of the conditions under which employers and employees are working in England.

During the past few weeks I have visited several centres of the cotton industry here and have been given the privilege of inspecting the mills in such places as Bolton, Hyde and Manchester. I have also been in conversation with many of the men who are doing their best to keep English textile works up to the standard as set by America, and thus I have been able to form conclusions that may be in accordance with facts, or otherwise, but which certainly are honest.

Before coming to the question of mill work proper, I wish to give a few impressions of some English institutions. In the first place traveling is one of the greatest drawbacks that awaits the American visitor. The means of communication between cities and the lack of street transportation make such a complicated matter of traveling that one often inwardly wishes himself back in America, although courtesy to English people prevents the audible expression of it.

From the moment the ship reaches the dock until one arrrives at the journey's end, there is a continual worry over one's luggage. To see all the passengers rushing to the luggage compartment of a train, selecting their own luggage by picking up a bag or valise and simply saying, "This is mine," and walking off with it, fills the American traveler with surprise. But when one has missed a connection and been compelled to stay all night in a strange city instead of being comfortably housed with friends, owing to this method of having to look after one's luggage, it changes from a matter of surprise to one of indignation and chagrin. When you add to this the fact that every one who handles your bag or trunk, or opens a carriage door for you or, in fact, does anything for you whatever, expects to receive a tip for it, no matter whether they are cabmen, porters or railway officials, it will be seen how pleasant is the lot of the traveling man in England.

Sometimes an American tourist determines to refuse to follow the custom in this respect, but he soon finds that he must fall in with the rest of the suffering public and cater to this evil. I heard of one man who refused to pay twelve cents for porterage on his bag for the simple reason that he carried the only bag he had, but the official on the dock called on a policeman nearby, who promptly informed the traveler that unless the money was paid he would be under the painful necessity of arresting him. Rather than have any further trouble the traveler gave the policeman the twelve cents demanded and departed a wiser man, but whether the policeman or the porter got the money, could not be learned.

Another case that came under my own observation: a man engaged a cab to go a short distance; the fare was twenty-five cents or one shilling, and the gentleman having just landed from a foreign country paid the cabby what he asked. The next day he wanted to engage the same cab, but the cabby refused to take him because on the previous day he had not been tipped.

For long distance travel the English railroads are not so well equipped as the American, though they are trying to combine both systems in one and the result is what is termed a "corridor car," having nearly all the

disadvantages of the old English car and but few of the good features of the American. So much for the traveling facilities.

The same lack of up-to-date methods is prevalent in the cotton industries that exists in the matter of transportation. In the course of talks with many prominent mill men in Lancashire, some of them manufacturers, others machinery makers, and still others textile school principals, the concensus of opinion was that if English manufacturers would discard their old machines and adopt the latest machinery and a more reasonable rate of speed, they would do more toward competing with America and her cotton cloth output, than by all the reports on American methods that can be made.

One of the gentlemen who was in America last year has published a book which I shall refer to more particularly in my next article, that gives many comparisons between English and American methods and endeavors to point out the differences that exist between the two countries, but I think a better idea of the conditions that exist here can be obtained giving a few of the many opinions that I heard in the course of conversation.

In the first place, the question of experimenting with new machinery or new ideas does not appeal to the average English manufacturer. He will listen to whatever the machinery makers have to say on the subject and at the end of the interview will dismiss the matter by saying that after the machine has proved a practical success and been adopted by other mills, he will think about it. In the meantime the American manufacturer has installed some of the new machinery and thus obtained an advantage that is hard to overcome. I know of a case at the present time where a great improvement has been made in a certain machine that is now on the market, and of about fifty machines ordered, over forty are from foreign customers.

In the matter of weaving machinery for ordinary calicoes this trait is very marked, and only a few firms have installed looms that are in any way up-to-date. Although many looms have been patented to compete with the Northrup loom, yet there is a dearth of such looms in the mills, and from a conversation I had with a large mill owner in one of the textile centres, it seems that many of the manufacturers are ready to give up the fight and concede the market to America. This man ships his product to America and was in America last year, so what he says should command attention. Said he: "After observing conditions in America and taking into consideration the fact that America can select the best cotton and can get operatives that will run twenty-four looms each, I predict that in twenty years there will not be a loom in the Bolton district."

In contrast to this I found men who would not concede that America had any reason to feel sure of outstripping England, and a few of them are really doing all that is possible to keep up with conditions as they exist today.

In respect to the question of all the cotton being grown in the United States, the manufacturers here are beginning to feel the need of a home market, and a subscription has been started by the "Master's Association" by which they hope to raise enough money to start a cotton plantation somewhere in British territory.

In respect to the number of looms run by one weaver, there seems to be a divergence of opinion among the operatives here, but I think the views expressed by a prominent textile specialist who has visited every part of the globe, will give an idea of the feeling that is growing among the English people. In the course of a conversation he said, "Before the last deputation left England for America,

I told several of them if they would reduce their speed to the level of America, and would use the same quality of raw cotton, there would be no need to investigate the question of America's supremacy." I repeated this to another manufacturer and he said it was impossible to get as good cotton as was used in the American mills. Now what are the real facts in the case?

In the first place there are looms running in the Bolton district at a speed of 240 picks a minute against 190 in the United States, while the stock used by the mills is rarely up to 1 inch staple. There is no doubt in my mind that the preparatory processes in the English mills are up to the standard of those in America, but after leaving the frames everything is sacrificed to speed.

In the spooling, for instance, I find that the yarn is wound on the bobbin by what is generally known as the "cop" wind, and when being spooled this yarn has to run over and around a rail covered with cotton flannel. This, of course, has two drawbacks, 1st, the waste cotton and lumps that form on the surface of the flannel are drawn on the spool and so get into the warp; 2d, the waste of time necessitated by placing the yarn around the rail amounts to a considerable item in the course of a day's work. Then again, many of the mills have nothing but mules in them and so are at a disadvantage.

In the matter of technical schools the government officials here are far ahead of America and if these schools are as useful as they are claimed to be, England should certainly be in the vanguard of textile progress. It was my pleasure to go through the new school in Manchester only two days before its formal opening by the Prime Minister. This building has been seven years in process of erection and up to the present time has cost $1,500,000. The departments include mechanical and electrical engineering, technical physics, general technical chemistry as applied to bleaching, dyeing and printing, printing, dyeing and general textile industries.

The machinery for bleaching, dyeing and printing is located in a specially designed room and occupies an area of 12,500 sq. ft. It is fully equipped with a view to experimental operations in connection with these branches and there is a powerful electrical apparatus of about 30,000 candle power for the rapid exposure of colors, to test the fastness, etc. The spinning and weaving departments are models of their kind. I was also in the schools at Blackburn, Preston and Hyde where the same standard of excellence is maintained.

(To be continued.)

Seasonable Fabrics.

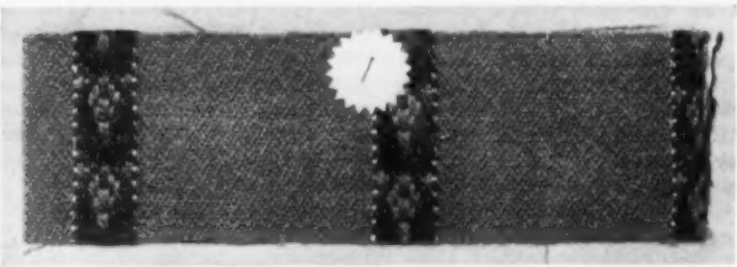
Dress Goods and Woolens. With the advance order business on men's wear woolens and worsteds practically completed and weather conditions rather unfavorable for immediate business, the woolen goods market presents rather a dull appearance and little activity is manifested in any direction.

While complaints from manufacturers are heard to the effect that agents are behind in their deliveries of sample pieces, the fact remains that buyers have been very well taken care of in this respect and that deliveries are fully up to, if not better than the average. The tone of the market is firm throughout and some advances are occasionally reported.

The American Woolen Co. has recently advanced the price of the Fulton goods 10¢. per yard and other similar advances are noted throughout the market. Clothiers, as is usually the case, are clamoring for delivery of their sample pieces, and as the most of them expect to have their lines on the road early in November, any further delays in the making up of their sample lines will be a serious handicap.

Prospects are bright for good duplicate orders but until the garment manufacturer has been out with his line, and has had an opportunity of judging as to the direction in which the greatest demand is likely to be, duplicate orders will be received only on a very limited scale.

The demand for heavy weights is very light indeed, but with the advent



of colder weather, there is no doubt but that stocks of heavy weights will begin to move. The demand for overcoatings is light, and there seems to be some uncertainty as to whether rough finished goods or smooth faced fabrics, such as kerseys and meltons, will be the better sellers, but from present indications, it would seem as

though the rough finished were going to lead in popular favor.

In dress goods, the demand for fancies for immediate selling has been exceptionally good along certain lines and the opinion seems to be gaining ground that fancies are again to have their day. The demand for Zibelines during the past month has been almost phenomenal and has far exceeded the expectations of manufacturers and selling agents.

Scotch effects and Snowflakes have also been freely bought, and green and blue Scotch checks in the smaller neat effects have been good sellers and are being used extensively both for full suits and walking skirts. Deering, Milliken & Co.'s Mayo plaid line at $1 per yard has been one of the best sellers of the class of goods referred to above.

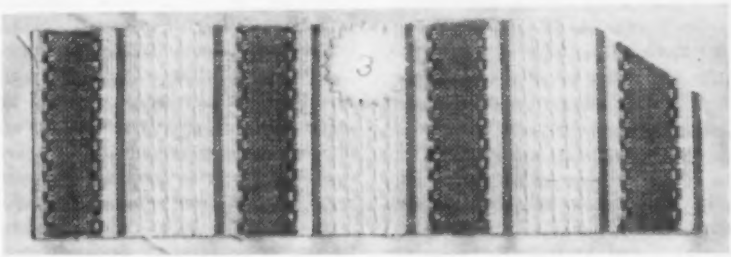
Broadcloths come in for their usual share of attention and are being used extensively for costumes both for street and indoor wear. The Assabet line of Broadcloths and Venetians has been opened up for the new season at advances of from 5c. to 10c. per yard over last season's quotations.

The advance order business on spring dress goods has been thus far extremely satisfactory. Fancies have been taken in fairly large proportions, but extreme styles are avoided, the preference seeming to be for neat checks and plaids and hairline stripes.

The more loosely woven Scotch effects and Snowflakes have also been ordered very liberally for spring and Zibelines are considered good and have been bought in liberal quantities by some large buyers who are usually credited with being successful in picking out the fabrics which are to be strongest in favor.

Waistings continue to occupy a prominent place in dress goods lines, goods of a similar character are freely sold and heavy mercerized basket weaves and checks such as are usually used for men's vests are being made up into shirtwaists for women's wear. Fig. 2, which is from a line of goods ranging in price from $1.00 to $1.50 will illustrate the class of goods referred to.

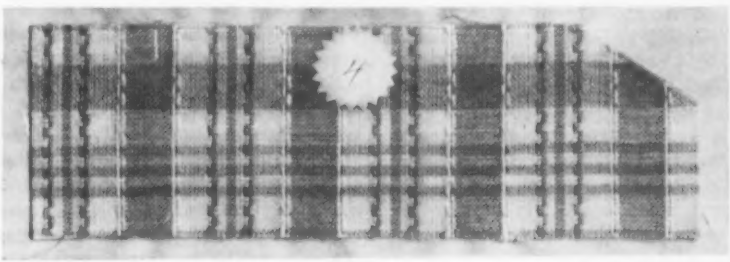
Indications are still favorable for an enormous white goods season and



notwithstanding the lateness of the season and business on this class of goods has been more than satisfactory. It was freely predicted last fall that waistings had had their day and would be little in evidence in the fall trade of 1902, but such has not proved to be the case. The Saxonia Mills of Philadelphia have had one of the best lines of waistings on the market and

preparations are being made on an extensive scale. The demand seems to be fairly well distributed over a wide range of styles with no striking preferences.

Linings. The lining market has remained unchanged, with prices firm and an even, steady demand for staple lines. Highly finished mercerized linings continue to be one of the leading



report having had an exceptionally good season. At Fig. 1 is one of their best selling styles at 45c. regular in 27 inch width.

White Goods. The unusual demand for heavy white goods for fall use has resulted in cleaning up the market of all desirable goods, and it is even difficult to find goods to fill current needs. Heavy Madras cloths, piques and

features and silk linings are also in good request. Few advance orders are being placed, buyers seeming to have confidence that present prices will not be advanced.

Prints and Ginghams. No new developments have arisen in this division of the market, but the situation still remains strong. Advance orders for spring have been practically all placed

and the demand for present use is only on a limited scale except in the case of staple ginghams, which are in excellent demand. It is the general belief that the coming season will witness a stronger demand than ever for ginghams, and extensive preparations are being made with the result that many of the prominent lines are now sold up. At Figs. 3 and 4 are shown two of the new patterns in checks and stripes from the Parkhill Manufacturing Co.'s famous Toile du Nords, which have been well sold up for the season at 8 1/2c., an advance of one-half cent over last season's price.

The Knit Goods Situation.

While the demand for heavy weight underwear for immediate delivery has been fairly well sustained, the underwear and hosiery market is practically in a dormant condition and little interest will be aroused until the opening of the lines for fall of 1903. It was anticipated that this would have taken place about the middle of October, but from the present outlook, it would seem as though November will be well advanced before operations will be fairly under way.

As usual, rumors are heard from day to day of this agent or the other having started out with his line, but it is safe to say that up to the time of writing, nothing has as yet been done and no prices on fleeces have been named. It is true that the buyer is ready, and in a great many instances, willing to place his orders now, but manufacturers are loth to name prices under the existing conditions in the yarn market.

Cotton is high and yarns are scarce and unless this situation is changed, there is little likelihood that many three dollar standard fleeces will be shown this season. There are a good many buyers of the opinion that the fleeced garment will be replaced to a certain extent this season by heavy ribbed goods, the wearing qualities of which have been sufficiently well demonstrated to warrant their serviceability.

On other lines, aside from fleeces, agents are gradually getting their samples together, but in no cases are lines being shown and prices are not being quoted. Until the fleeced goods situation has been settled and the early orders placed, other lines will receive little or no attention. Buyers who are in the market at the present time are devoting their attention largely to hurrying forward delayed shipments and to filling in to cover immediate requirements. Even while new lines for fall season for 1903 are being prepared, and while buyers are, in some cases, attempting to place their orders, it is a fact that many manufacturers are now far behind on their deliveries for this season and the jobber is being caused considerable inconvenience thereby. Attention is directed to this merely to show the way in which one season overlaps the other with hardly even a breathing space in between.

As is usually the case, at this season of the year, sweaters are occupying a good deal of attention, and the demand this season has been so much greater than that of past seasons that manufacturers engaged in this particular branch of the knit goods business are unable to keep up with their orders and late deliveries are the rule.

Unlike the underwear business, this branch is conducted on more of a hand-to-mouth basis and large advance orders are the exception rather than the rule. Juvenile sweaters in sizes from two year old up are in good request and extensive lines are being shown in the leading retail stores, particularly in the larger cities.

The hosiery market is in good shape generally and the price situation has stiffened up considerably during the past few weeks. Buyers who bought lightly at the beginning of the season, thinking that they could fill their requirements at the same prices or better, later on, have, in a majority of cases, been obliged to pay advances

when they come into the market, and in some instances have been unable to place their orders at all for reasonable deliveries.

The selling agents of one of the largest mills in the country manufacturing ladies' fleeced cotton hose have advanced their prices on all their numbers from 2 1/2c. to 5c. per dozen, and when buyers protested they were politely told that they could either leave their orders at the advanced prices or not, just as they pleased.

It is too early, as yet, to look for duplicates on the spring lines, and some doubt is felt as to the stability of laces for another season. The demand, this season, has certainly been enormous, but the buyer who has his ear to the ground can detect signs of a decline in popularity of the lace hose. It is certain that lace half hose have had their day and it is only a question of time until ladies' lace hose shall be supplanted by some style in which durability and wearing qualities are prominent.

Reports from Chemnitz still indicate great activity in that market and large shipments of golf gloves for the American market are being made from week to week. Should the present mild weather continue for a short time longer, it is feared that importers and jobbers may endeavor to accelerate the movements of glove stocks by cutting prices, in which case small profits will be the ultimate result of the season's business.

Fair sized orders are being placed on lisle gloves and silk and lisle net gloves and mits for the coming spring season and a good business on this class of goods is looked forward to.

—To have true friends, one must know how to make one and also deserve to have one.—La Roche.

—To disclose a secret is to give an example of indiscretion.—Mme. Swetchine.

—A lie is good for nothing since it deceives but once.—Napoleon.

The Cotton Industry Through European Spectacles.

At the recent meeting of the New England Cotton Manufacturers' Association in New York, several interesting papers were read upon the cotton industry in this and other countries. The speakers without exception, were of the opinion that this country will eventually gain control of the world's trade in cotton goods.

While the facts on which this belief were founded seemed convincing, yet in view of our propensity to indulge in spread-eagleism, the European view of the question is worthy of consideration and is found in an article by Dr. Kurt Kuntze-Dresden in the Leipziger Zeitschrift fuer die gesamte Textile-Industrie.

Says this writer: The problem of cotton growing in the German colonies was brought up at the October session of the German Colonial Congress at Berlin. This question is recognized as one of the utmost importance by the entire German cotton industry. In view of the importance of cotton manufacturing in our national life, we can set the problem down as one of the utmost importance that the future has in store for us.

It is certainly not mere chance that in all countries in which cotton manufacturing is developed to any degree, this question of the cotton supply has become acute and in some countries reached a crisis. Everywhere the search for cotton fields has been stimulated by the nearly complete dependence of the cotton industry upon the American market.

The cotton industry of Europe is placed in a dangerous position by reason of its dependence upon one market, and this danger is still further increased by the development of cotton manufacturing in America. Hitherto the German cotton industry has been dependent upon the cotton crop of America, and German cotton manufacturers have anxiously watch-

ed the reports of rain and sunshine in the United States. Now they have arrived at that point where they are compelled to recognize their complete dependence upon the American market.

This is due to speculation in the raw material and the rapid extension of cotton manufacturing in America. No matter what group of speculators has the upper hand in New York, an industry dependent upon the American market must reckon with them. The uncertainty and disturbance thus introduced into the cotton business destroys the chances of steady and prosperous development. The best methods of production and the most approved construction of manufacturing plants cannot compensate for the loss resulting from this evil. The recent and very extensive shrinkage in the production of the immense English cotton mills is a striking example of this condition. This shrinkage of production has been due to the high prices of cotton brought about by speculation in New York, which made it impossible for the Englishman to compete with the Indian mills, which are independent of the American market.

The development of the cotton manufacturing in America has resulted in a steady shrinkage in the quantity of raw cotton available for export from the United States and in the last ten years this decrease has been especially marked. In 1890 out of a total crop of 10,000,000 bales, 2,000,000 were used by American mills, while in 1900 with a crop of 9,500,000 bales, the home mills used 4,000,000 bales.

The export of cotton goods from Germany to the United States has fallen off from 46,839,000 M in 1899 to 44,903,000 M in 1900, or 1,990,000 M in one year. In the first named year our exports to the United States amounted to 27 87/100 per cent. of our total exports of cotton goods, while in the latter year they amounted to but 18 31/100 per cent.

The securing of an adequate supply of the raw material for the German cotton mills grows more difficult and our ability to compete in the world's markets against the omnipresent American competition has been seriously impaired. This competition has been increased by reason of the low cost of production in America due to the saving of freight, commission and insurance charges.

The cotton industry of the United States is moving steadily toward the southern section of the country. The industry is, as it were, in the cotton fields, and the increase in the number of spindles in this section makes a striking showing of the development of the American industry. The spindles in the Southern States increased from 561,360 in 1880 to 5,819,835 in 1900. In the year 1890 the number of spindles in the South was only 1,500,000, and the consumption of cotton in these mills has increased in similar ratio.

In the discussion of the cotton question, the possibility has often been referred to that the cotton producing countries, and in particular the United States, might annihilate the cotton manufacturing industry throughout the rest of the world, by forbidding or limiting the export of raw cotton or by export duties that would increase the cost of the raw cotton to foreign competitors. It has also been stated that the United States and Great Britain could proclaim a continental cotton blockade. We look upon this as a very remote possibility.

The cotton mills of the United States consume as yet but a very small part of the cotton crop, and consequently America must look to other countries and principally to Europe for purchasers of her surplus cotton. Not to mention the fact that the Americans are far too practical to throw away such an enormous sum of money, such a procedure would result in the breaking off of all friendly commercial relations between the United States and Europe.

It is not to be expected that cotton manufacturing in the United States will develop in the future as rapidly as in the past, since there are now strong indications that the production of the American cotton mills is in excess of the home demand. The recent Boxer troubles in Asia proved that the whole American export business rested upon an uninterrupted trade with China.

We do not believe that an American export duty on cotton will ever be necessary to insure a supply of cotton for the American mills. Any other grounds for such a measure cannot be imagined. An export duty on American cotton would be an extraordinary experiment in international politics and would result in widespread reprisals by the countries affected.

On the other hand England now imports from countries outside of her possessions 80 per cent. of the cotton used in her mills. Consequently reprisals by other countries would injure England much more than an export duty on British cotton would benefit her.

The Trials of a Young Superintendent.

BY BEN SHAW.

IV.

(Continued from October.)

On examining the leather rolls I found that a large proportion of them were carelessly covered. Too much glue had been used on the cloth cushion, and it had naturally worked up through the joint at the ends of the cloth where it was butted.

After it was dry it formed a hard ridge which was immediately felt by the yarn through the leather cot. These rolls were covered in our own belt shop so I sent at once efor the roll coverer, and gave him an object lesson in the economy of glue, then and there.

I have always been an enthusiastic advocate of roll covering at the mills and believe a considerable saving can be made in that way, but whether the covering is done at the mill or by outside concerns, a sharp eye must be kept on the rolls for this trouble.

The speed of the rail must not be overlooked on a spinning frame any more than on a fly-frame. If the traverse is too slow the yarn will pile up on the bobbin. If the yarn is to be spooled this may not be so serious a matter. I have known filling to pile up in this way, however, and when it came to weaving the loom would continually knock off.

Of course the boss weaver would say it was poor yarn, and as filling is not ordinarily broken for strength tests the only way to judge it was by the eye.

The true cause of the trouble was at last found through a spooler's noticing that a warp bobbin was piled up with yarn in the most irregular way. This set the spinner to thinking and he eventually hit upon the solution of the trouble.

The yarn may pile up in this same manner if the bobbin is loose on the spindle and is allowed to slip up and down. To insure a well filled bobbin, take care that it fits down into the cup firmly and stays there.

"Bancroft," I said one morning, "why don't you do something about that cockled yarn. I can't see any improvement as far as that is concerned. What is the matter?"

"Poor roving. I can't make good yarn out of uneven roving."

"Let me see some of it."

He brought three bobbins. While unwinding it from the bobbins it looked even enough to the eye. I took a strand in my hands and gave it several turns of twist. The twist all ran into spots, leaving bunches of soft roving without any twist whatever.

This may have been caused by improper setting of the rolls, by mixing long and short staple, by the wrong trumpet on the railway head or its improper setting, or by many other things in the card room.

"You don't find all of the roving like this, do you?" I inquired.

"No, but enough of it is."

"Well, you take a few bobbins over and show them to Walker, and see what he has to say to it."

Mose looked somewhat dubious but did as he was instructed. I didn't see him again until after dinner. Then I asked him if he had seen Dan and what he said.

"Yes, I saw him, but I'll be blowed if I'll ever try to fix things up with him again if I lose my job. He's too confounded funny, anyway."

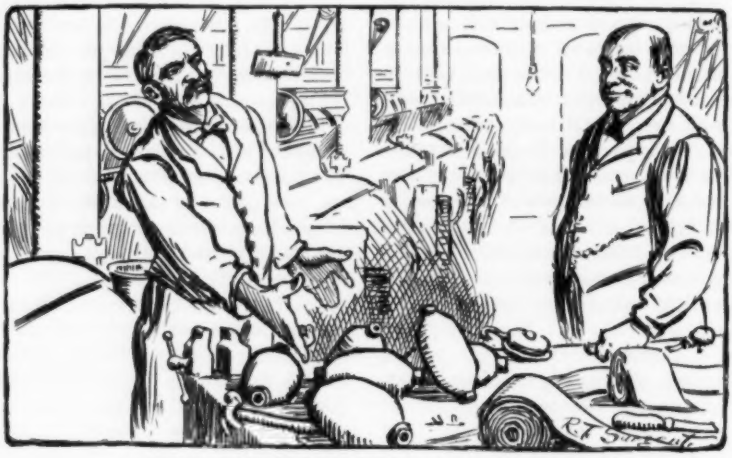
tween them. And I was bound to have that roving attended to at once. So I sought out Dan Walker and found him helping cut roving off bobbins, probably some of this same roving.

"Dan," I said, "what did you do to Mose?"

"Nothing as I can recollect."

"Well, he's got a bone in his throat, and you put it there. Now, what is the trouble that you two can't agree?"

"I'll agree with him all right, but he's too pouty to suit me."



"CAN'T YOU MAKE NO BETTER STOCK THAN THAT?"

"Why? What did he say about it?"

"Oh, he didn't say nothing about business, and I don't want to have nothing to do with him anyway."

"Now, see here, Mose, that's all nonsense. There is no reason under the sun why two overseers can't get together and straighten little things out, instead of having to report to the office,"

"Well, maybe they can, but I know one man you can't get me together with," he replied, and with this reply he turned away.

I decided to let the matter drop for the present as far as he was concerned, but could not repress my curiosity to know what passed be-

"But what was the trouble this morning?"

"Say, now, I'll tell you," he replied with a grin. "I'll give you the whole story, and then you can say if you think he'd ought to get mad. Mose came up here with half a dozen bobbins of roving and just threw them down on the bench here and he says, 'Dan,' he says, 'I can't do nothing with that roving. It ain't fit to use. Can't you make no better stock than that?'

"I felt kinder riled up but I kept cool and says, without touching the roving, I says, 'I s'pose you can tell me what to do for it, can't you?' and

he says, 'Well, if I couldn't, I'd jack up my job.'

"'Now, Mose,' I says, 'you jest hold your hosses for a minute and I'll tell you a little story. When I was a boy, and told my old man I was going into the card room, and learn the business, he says to me, "Dannie," he says, "you better go into the spinning room first and learn that, and then go into the card room afterwards. Then when you get too old to be a boss carder you can get a job as a boss spinner."' Mose just turned on his heel and said, 'You be ——,' and walked off. Now don't you think he was unreasonable?'

I laughed. Dan had a droll way of telling a joke that would coax a laugh out of anybody who had any sense of humor.

"But, Dan, that sort of thing doesn't go down with Mose and you'll have to cut it out, for I shall insist on your getting along with him, at least, enough to do business."

"Now" I continued, "I want you to fix it up with him somehow. I don't care about your being chums but you must at least talk about the work."

"All right," he said with another grin, "send him around."

I thought discretion the better part of valor, however, and decided to let the matter rest for a few days. That grin of Dan's would never soothe Bancroft's sore feelings, at least, not right away.

They settled it eventually between themselves, and while I never thought any love was lost, especially on the part of the spinner, yet they succeeded in making a showing of peace which suited my purposes fully.

I found that the cockled yarn came not only from uneven roving but from many other causes.

I noticed two frames where the yarn was spurting out from the rolls. An examination of the yarn showed it to be very uneven, twisting up into knots badly whenever the least bit slack.

Investigation of the cause on one of these frames showed the stirrup strap had stretched until the hook bumped on the board. With every jounce the weighting of the rolls was relieved, causing a continuous spurting out of the thread.

The other frame was delivering almost the same quality of yarn, but we could find no trouble with the weighting. After considerable time it was found that the steel roll, which was driven from one end of the frame, was tight in its bearings. This would cause it to stick until the torsional strain became too great when the roll would jump forward, causing an excessive draft on the yarn then passing through, and causing it to spurt out.

Close touch with the inside of the mill will bring to light numberless causes for worry and bad work, and only eternal vigilance and judicious experimenting will help to make the rocky road passable.

(To be continued.)

A Guide to Knitting.

BY F. W. HERINGTON.

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I. THE PLAIN STITCH.

Knitting is the formation of loops or stitches, in succession, from one continuous thread.

There are three different kinds of loops or stitches.

1. The plain stitch.
2. The rib or purl stitch.
3. The tuck stitch.

There are knitted fabrics where additional threads are interlaced with one or the other of these different stitches, and thus become part of the knitted fabric but are not loops or stitches in themselves, as they do not form a knitted fabric as will either of these three different kinds of stitches.

When Wm. Lee, about the year 1589 invented the first knitting machine, by watching his wife knit by hand, using Heinrich Bruggermann, we find a

what are called knitting needles, which were round pieces of wood or steel, pointed at each end, the plain stitch, which is the same loop or stitch, now made by machinery, was formed as follows:

Take a single thread and form a loop by tying the thread together, Fig. 1.

Fig. 1.

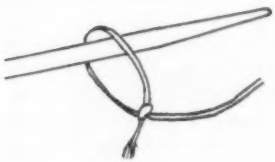


Fig. 2.

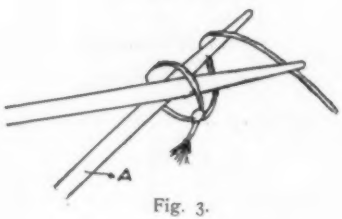


Fig. 3.

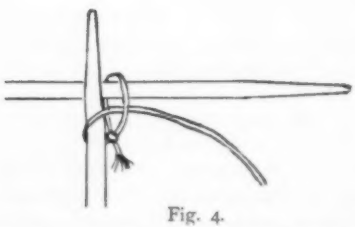


Fig. 4.

This first loop is put on the knitting needle, Fig. 2.

The other needle, A, Fig. 3, is inserted through this loop, Fig. 3.

The thread is passed under and around the needle, the needle with this thread over it, is drawn down and through this loop, Fig. 4, thus forming another loop, the second loop thus formed is transferred to the first needle.

By repeating this operation, as many loops as desired are made, and these loops, A, Fig. 5, as made, transferred to one needle, D, Fig. 5.

To make the second row of loops and all additional rows, the same operation in forming the loop is repeated, but after the thread is drawn through the loop, and another loop formed, the loop through which the new loop is formed is cast off the first needle and the new loops, C, Fig. 5, remain on the second needle, B, Fig. 5.

This operation is repeated until all the loops are cast off the first needle, A, Fig. 5.

When using only two needles, by hand, a flat knitted fabric is formed with a selvage edge on each side, E, Fig. 5.

To form a circular knitted fabric by hand, 4 knitting needles are used, the stitches being divided on 3 needles, the fourth one being used to form the loops with each of the 3 in succession.

The loops are thus made continuous in a circle, from one needle to the other. With only two needles, the operation of forming loops is repeated back and forth.

To form the plain stitch by machinery, using spring bearded needles, a wheel called a sinker of feed burr, carries the thread up, and into, and to the top of the needles, B, Fig. 6, thus forming a partial loop.

For the purpose of our illustration we have supposed that loops have been previously formed on the needles, C, Fig. 6. These loops are carried up by a wheel called a landing burr, and at the same time, the beards of the needles, D, Fig. 7, are closed by a needle presser, so as to allow the previously formed loops to pass up over the beards of the needles, and to the tops of the needles, where another wheel, called a cast off burr, engages these loops, casting them off, and by so doing forms new loops, E, Fig. 7, from the partial loops, B, Fig. 6.

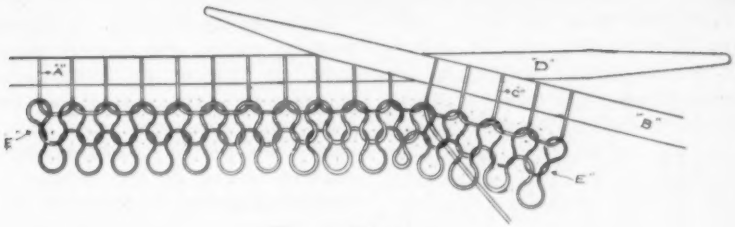


FIG. 5.

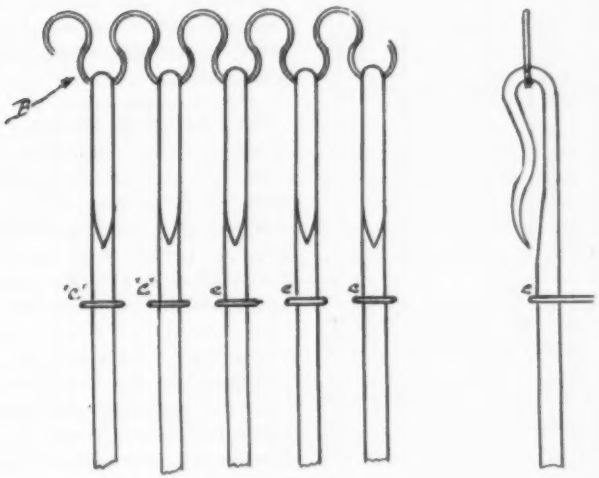


FIG. 6.

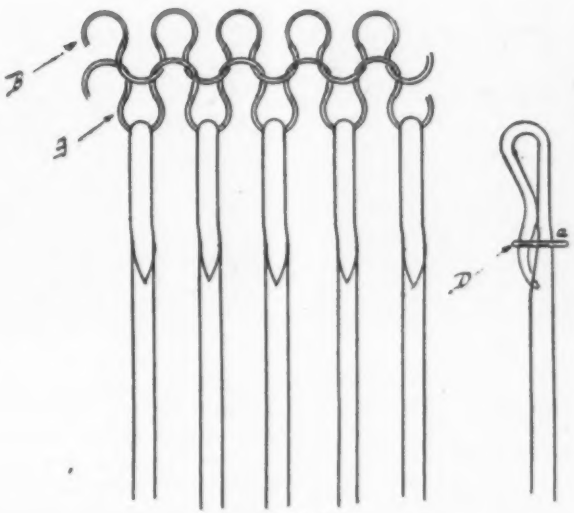


FIG. 7.

These new loops are then carried down below the beards of the needles, Fig. 8, thus leaving the tops of the needles free of any thread, and taking the place of the previously formed

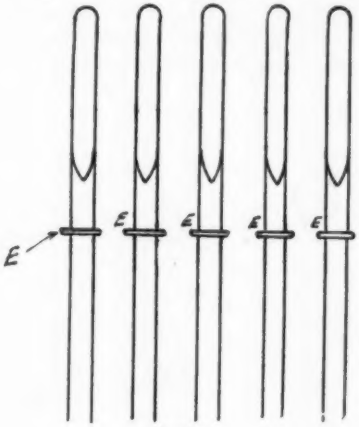


FIG. 8.

loops, C, Fig. 6, so as to be able to repeat the operation as at the beginning, B, Fig. 6.

Fig. 9 is a view of the face. Fig. 10 of the back of the plain knitted fabric shown on an enlarged scale at Fig. 7.

The plain stitch in knitting is the

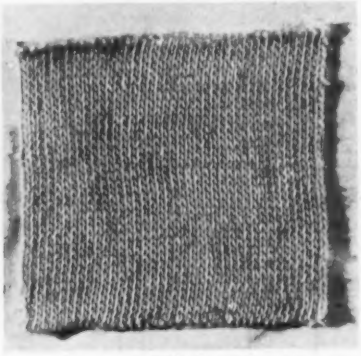


FIG. 9.

one largely used for all the different grades of men's knitted underwear.

It is also used almost entirely in women's knitted hose, and partly in men's knitted half hose, the top of men's hose being composed of the rib stitch, which will be treated in our next article.

(To be continued.)

Embroidering Machine. A German machine builder has recently placed upon the market an embroidering machine embodying several new features, one being what they call a stiletto apparatus capable of being changed to suit the requirements of the various patterns and designs. The new machine is arranged to take in lengths up to 6 3/4 yards, instead of 5 yards as formerly. An automatic jacquard apparatus dispensing with much of the attendant's labor, has been applied.

Ring Spinning Machine with Inclined Ring Spindles. The Elsaessischen Machinenbau-Gesellschaft, Alsace, have recently placed on the market a ring spinning machine. The principal feature is the inclination of the spindles so that the yarn passes in a straight line from the delivery rolls through the guide to the traveler. The advantage claimed for this arrangement is that the twist is distributed uniformly throughout the entire distance between the traveler and the delivery rolls, instead of being partially confined to the space

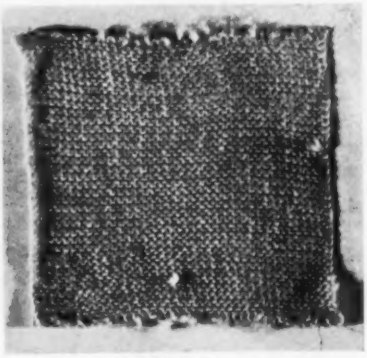


FIG. 10.

between the guide and the traveler when the spindles are upright and the yarn presses against the guide. The builders claim that this new arrangement is of especial advantage for spinning soft twisted filling.

—On an ignorant judge, it is the robe that we salute.—La Fontaine.

Textile Conditions in England.

S. B. H.

Special Correspondence of the Textile World.

Textile conditions in England may be said to be in a fair reasonable way, and if things are not booming, at least there is a fair display of briskness which is worthy of the annals of textile Yorkshire in particular. First and foremost we must look at the wool trade. Here there is a fair show of briskness in Bradford, there is a big consumption and consequent turnover, and to some extent those owning machinery are rejoicing in having plenty to do. But as one leading spinner said to the writer the other day, "We are working for 'nowt,'" and this expression just about covers the whole field.

In wool itself, merinos, of course, occupy a fairly prominent position, but Bradford is struggling in the mire on account of low prices, values being fully 3 cents per lb. below the actual cost of wool either in London or Australia. I can buy today a most respectable standard 60s top at 48c., but that man would be a genius indeed who could buy the wool in any market in the world to produce a top at anything near that figure.

Sufficient time has now elapsed for topmakers to get their wool combed which they bought in London at the fifth series of sales, and I have not yet heard of a single party who has been able to bring in a good standard 60s top at less than 25d. (50c.), many tops costing 25 1/2d. (51c.), and others 52c. per lb. But a man might as well ask for his neighbor's front teeth as expect to obtain such a price today, consequently those having wool and tops are simply holding back until they can sell to advantage.

The general feeling seems to be that Bradford rates will have to come up to the cost of wool in London, for there does not appear to be the least likelihood of wool being any cheaper this side of the New Year. There has been some strong attempts made to engineer a squatter's boom, but the trade is strongly opposed to such a move, consequently there is no tendency at all to rush prices in the least.

The same difficulty, spinners say, obtains in their department, and that yarn prices are too low considering the cost of the raw material. I am not so freely disposed to accept as gospel all that spinners say concerning their yarn prices, for any orders they are accepting today show a "living wage" and some profit. I hear tell of a few orders being in the hands of Bradford spinners, for medium crossbred yarns on American account, and, judging by recent exports, there are some more weights still to come forward.

Our manufacturers are the parties who are opposing most strongly the rising tendency of prices, and no doubt they have just cause for manifesting strong opposition to paying more for yarns. Fabric buyers have not forgotten the terrible experience of three years ago, and we see them today fighting like lions and opposing tooth and nail the increased prices which manufacturers are compelled to ask in self defence.

In worsted coatings prices have been advanced something like 6c. to 12c. per yard, according to weight and quality. Where a manufacturer has been well bought in yarns and he can sell his pieces at old rates, they are consequently very busy, but where men are having to pay higher rates and asking more, their footsteps are being dogged at every turn by clothiers and merchants. Where it is possible to substitute a lower class of yarn it is being done, and where fine Botany cloths have been selling and the "next best" can be substituted this is also being done in preference to paying more.

Bradford dress goods manufacturers are preparing for the next spring season, but nobody yet seems to have any definite idea as to what is going

to sell. Everything has been prepared, and both designs in plains and figures in all shades and qualities have been prepared in anticipation of an extensive demand.

Just at present in men's wear woolens the principal thing that is selling is "rainproof" coverts, and manufacturers who make them are very busy. From 72c., 6/4, 16 ounces, some very good cloths indeed are being made, and one of worsted and one of colored woolen forms the twist for the warp, and all black is the weft. They are mostly made in dark steels and Oxfords, and there is every appearance of rainproofs becoming a "bread and butter" article in the future.

Then, too, all the rage seems to be in little black and white effects both for women and men's overcoats, women, of course, having theirs made into jackets. Here prices vary considerably, and anything from 30c. upwards can be paid according to the cloth in question. I am the most surprised at the return of popular taste to what looks old fashioned, and these black and white effects are almost as ancient as Adam. Of course, they are shrunk and sold as "rainproof" garments, but there appears to me to be very little in the body of the cloth to resist the rain for long. I shall have something more to say on these cloths, probably next month.

The cotton trade of Lancashire seems to be head over heels in the movement of the new crop, and "bulls" and "bears" are fighting one against the other for supremacy. The new crop estimate continues to be a vexed question in dispute, and whether to believe that the crop will be 11,000,000 bales or under is about as undecided as it was six weeks ago. Some time ago many alarming cables of a "bullish" nature were sent out, but little notice is being taken of them, and they are looked upon as being absurd. In Manchester, the general opinion is that the yield will be somewhere about 11,000,000 bales. The fact of the movement of the new crop being on such an enormous scale is taken as an indication that these high prices cannot last.

Trade conditions in Lancashire are if anything a shade better than they have been, and if the raw article could be got down to a reasonable limit, more orders for yarns and cloth would certainly be forthcoming. During the past month there has been a change in cotton quotations to decimals, and the new method is considered to be both beneficial and more convenient to the trade at large.

The only thing that seems to make against the cotton trade is the high price of raw material, and the consequent unwillingness of exporters to pay more. In spite of the vehement protestations of the American "bull" clique, few men here have any confidence in the permanence of the present level of values, or want to speculate on the chance that the bulls will succeed in further advancing values. Indeed, both Manchester and Liverpool markets have assumed a "bearish" attitude, although that is by no means evidence that much selling has been done.

Business continues exceedingly difficult to negotiate in the cloth market on account of price, merchants exhibiting no eagerness to operate. The Indian market seems very unfruitful of orders, and unremunerative in its rates. Dealers in Calcutta shirtings refuse at present to raise their limits, consequently there is little doing, and many looms are standing.

Trade with China has been better, but foreign markets generally are sluggish, many orders being kept back on account of the inability of manufacturers to accept them at current rates. Perhaps readers will be able to understand the position better if I give them a list of current quotations for leading descriptions of yarn and cloth. This will be useful to those doing an export trade.

CURRENT QUOTATIONS.

YARNS.

	Per lb.
32's mule twist cops	7d. to 7½d.
40's mule twist cops	7½d. to 8d.
50's mule twist cops (American)	9d. to 9½d.
50's mule twist cops (Egyptian)	9½d. to 10½d.
60's mule twist cops (Egyptian)	11d. to 12d.
40's weft	7d. to 7½d.
50's weft	7½d. to 8d.
60's weft	9d. to 9½d.
20's water twist bundles	6½d. to 7d.
30's water twist bundles	7½d. to 8½d.
40's mule bundles	7½d. to 8½d.

CLOTH.

In.	Yds.	Counts.	Nos. of Yarn or Weight.		*Per Piece. s.	d.		s.	d.
35	38	16 x 14	8½ lb	Shirtings	5	3½	to	5	9
35	38	17 x 16	9½ lb	Shirtings	6	0	to	6	10½
38	38½	15 x 12 / 16 x 15	8½ lb	Shirtings	5	3	to	6	0
39	38½	16 x 15	8½ lb	Shirtings	5	10	to	6	8
38	38½	18 x 16	10 lb	Shirtings	6	4½	to	8	0
38	38½	17½ x 17	10 lb	Shirtings	7	10	to	8	10
45	38½	15 x 12	9 lb	Shirtings	5	10	to	7	0
45	38½	16 x 15	9 lb	Shirtings	7	1½	to	8	1½
30	40	—	14 lb	Drills	6	10	to	8	0
39	20	14 x 14	40's-50's	Jacconets	2	7½	to	2	10
44	20	14 x 14	40's-50's	Jacconets	2	10½	to	3	3½
32	24	14 x 14	6 lb	T cloths	3	9	to	4	3
32	24	18 x 18	7 lb	Mexicans	4	9	to	5	6
32	116	16 x 16	3's 50's	Printers	14	0	to	15	0
36	50	19 x 22	11½ lb	Printers	9	10	to	10	4
36	40	—	12 lb	Sheetings	8	0	to	8	9

*Nominal.

The hosiery trade of Leicester exhibits a fair degree of prosperity. There is a very large business doing in yarns, stocks are small and prices firm. The hosiery branch is active, and the clearance of stocks of heavy fabrics has given a very healthy stimulus to the trade. For export there is doing a fair good trade, which is helping considerably to strengthen the market.

The "Best" Pneumatic Coating Machine.

Every one having occasion to apply paint, whitewash or other liquids to surfaces will be interested in the "Best" Pneumatic Machine, shown in the accompanying illustration, and which bears the name of its inventor —Hook.

The method of application is not like squirting liquid through a hose, but is based on scientific principles looking to the economical handling as well as application of the material. It is claimed that one man with a pneumatic machine can cover from 20,000 to 25,000 sq. ft. of surface a day, that the work is equal to hand painting in appearance and much more durable. The average day's work of a man with a brush is 1,000 sq. ft. or about one-twentieth of the capacity of this machine.

The air and liquid are compressed in a suitable receptacle and the air discharges the liquid from the hose in the form of a spray. Raising the pressure to the desired point requires but two or three minutes and the machine will work automatically for at least ten minutes without further operation of the pump. It is claimed that this is the only machine on the market that does not require a continuous action of the pump to keep it in operation.

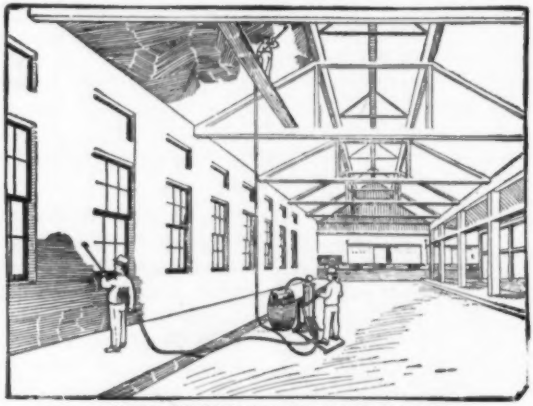
The builders claim that besides using more paint, a brush will not begin to cover a surface so well as this machine, as it is impossible for bristles to go into all the cracks and crevices that are reached by the spray. Following are a few of the companies using this machine:

Standard Oil Co., American Cotton Oil Co., Studebaker Bros. Mfg. Co., McCormick Harvesting Machine Co.,

American Radiator Co., Michigan Peninsular Car Co., Singer Mfg. Co., National Biscuit Co., Armour Packing Co., New York Central Railroad Co., American Express Co., The Fairbanks Co., National Tube Co., Atchison, Topeka and Santa Fe Railroad Co., United States Steel Corporation.

Further information can be obtained from the builder, F. E. Hook, Hudson, Michigan.

At present even the home trade of Germany in textile machinery is reported as poor.



THE "BEST" PNEUMATIC COATING MATERIAL.

Silk absorbs tannic acid very readily, and will take up from 28 to 35 per cent. of its weight; hence tannin is used to weight silk. It is worth noting that the action of the tannin on the silk fibre is similar to the action of tannin on skin.

The cultivation of flax in the State of Tlaxcala (Mexico) has proved so successful that the project of establishing a linen factory at some point convenient to the fields and readily accessible from the Mexican and Interoceanic Railways, both of which intersect the State, is being seriously considered. There are already two linen factories, one in Mexico City and the other near Cuernavaca, both doing well and known as the Compania Linera.

Finishing Wool and Mixed Fabrics.

XIX.

BY N. REISER.

Translated from the German for the Textile World.

Continued from October.

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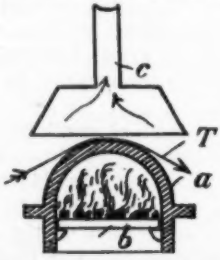
SINGEING.

In place of shearing, the loose fibres are often burnt off by exposure to hot plates or a flame. This process is employed for worsted and imitation worsted goods, and for certain raised patterns in cloaking and upholstery fabrics. Singeing is particularly serviceable for diagonal and ribbed weaves, where the shear blade cannot reach the low parts of the pattern.

It is known that singeing was em-



ployed as early as the latter part of the 18th century. Metal rods or plates

at that time were heated and the cloth was held over them. A later improvement consisted in rotating a large metal rod, which was heated by

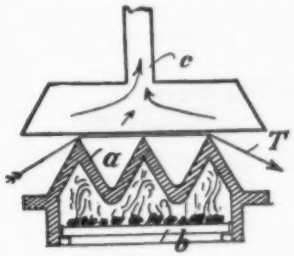


FIG. 66.

a fire underneath. Stops were provided on either side to prevent the fire reaching above the lower half of

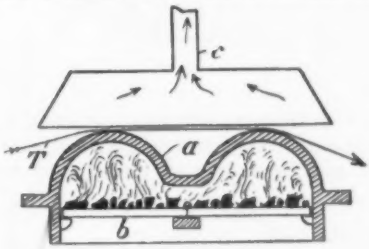


FIG. 67.

the rod. The cloth was singed by passing it back and forth on the top of this slowly revolving rod.

Still later, hollow cylinders heated from the interior were substituted for the solid revolving rod. At the present time, there are two principal methods of singeing: 1. With hot plates; 2. With a flame.

SINGEING WITH HOT PLATES.

A sheet of copper is bent in the form of the half cylinder, a, Fig. 65, and heated by a fire underneath. A ventilator, c, serves to carry off the smoke and heat. Figs. 66 and 67 show two other forms; in all three figures, a is the singeing plate, b the fire place, T the cloth, and c the ventilator.

Fig. 68 shows a singeing machine built on the same principle. The cloth is first wound on the roll, a; from this it passes under the roll c, against the brush l, then over another guide roll to the singeing plate d, and then to the other side of the machine, where it is again passed over a brush, b. After the whole piece has passed over the singeing plate, it is reversed and run over the plate in the opposite direction, and the process is continued until the desired finish is obtained.

The brushes serve both to raise the nap so that the fire can singe it off more easily, and to remove the burnt

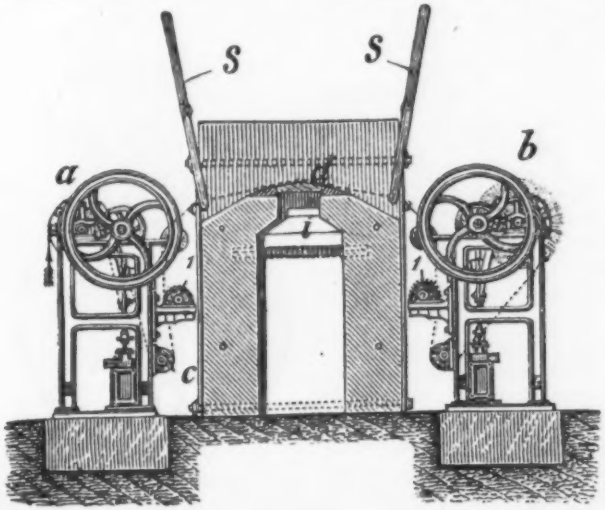


FIG. 68.

material clinging to the goods, and thus clear the fibres for the next run.

Rolls are mounted on the levers, s s, by which in case of necessity the cloth can be raised quickly from the singeing plates.

The gas machine can be built so that the flame is automatically extinguished when the driving belt passes to the loose pulley. This obviates any danger of burning the cloth when the machine is stopped.

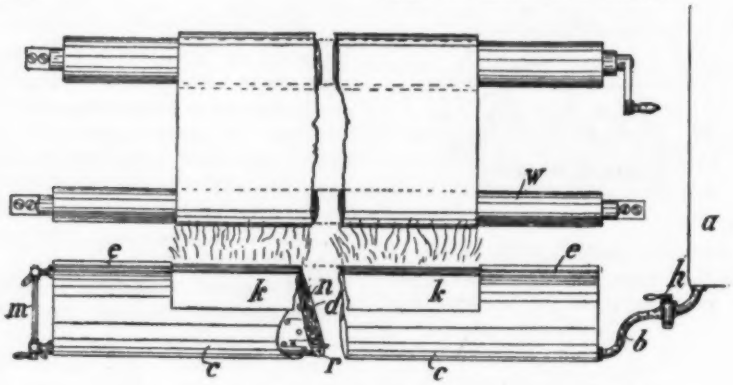


FIG. 69.

SINGEING WITH A FLAME.

Fig. 69 is the front view, and Fig. 70 a cross section of a burner adapted for oil or alcohol. The fluid is stored in the tank, a, and carried by the pipe, b, to the cylinder, c, which contains the burner.

The construction of the burner is shown at Fig. 70, in which, n, is the wick; d, the metal cover with the edges, l, perforated to admit air to the flame. The wick is adjusted by the screw, s, and nut, r. The fluid runs into the cylinder, c, and its height is indicated by the gauge, m. The wick absorbs the fluid through the perforated cover, d, and is ignited at the top. The cloth is exposed to the flame as it passes around the roller, w. The slides, e, are for regulating the width of the flame to correspond with the width of the goods being singed. The hinged cover, k, is for extinguishing the flame.

A gas flame supplies the simplest means of singeing cloth. No complicated apparatus is required and the flame can be brought into use, or extinguished instantly without the tedious firing process that is necessary when singeing with hot plates.

Fig. 71 shows the construction of a gas singeing machine which has been in use for more than thirty years in

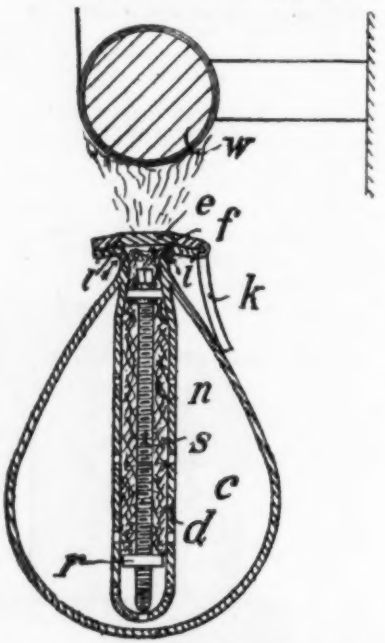


FIG. 70.

Europe. The dust and heat are sucked through a pipe, b, by an ex-

hauster as shown in the drawing. The pipes, a, supply the gas for the flame. The cloth, W, is brought in contact with the flame by passing over rolls; it also passes over rods, l, which serve to loosen the dust from the goods, which is then carried away by the exhauster.

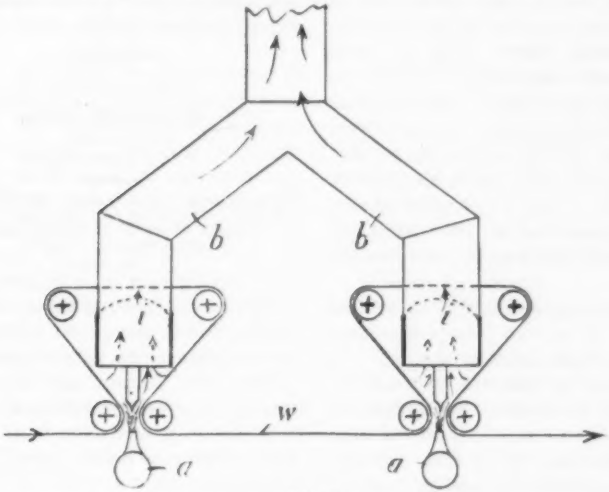


FIG. 71.

Another method consists in running the cloth around carrier rolls so that both back and face can be singed in one operation. It is generally found necessary to use hollow rolls and keep them cool by a current of water or air circulating through the interior.

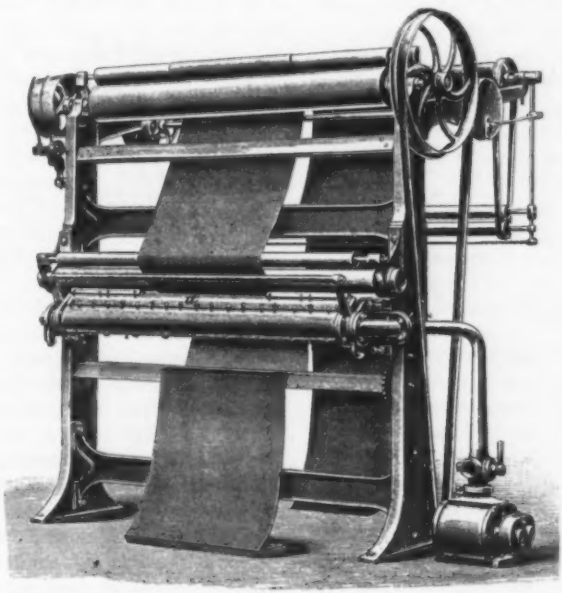


FIG. 72.

Fig. 72 shows a German singeing

machine in which a mixture of air and gas is used. It consists of a frame in which the burner, a, is placed along with the necessary rolls, brushes and folder. Two or more burners are sometimes used to increase the production. The air that is mixed with the gas is taken from the outside of the workroom, so that the dust may not get in the burner and clog the flame. The pump shown in the illustration is for mixing the gas and air and forcing them to the burner.

For many gauze fabrics, as well as jute goods, it is well to have the flame pass completely through the cloth, as in this way it removes the loose fibres inside the fabric. To accomplish this object, the cloth is passed over a cylinder having a slit running lengthways, the flame passing through the goods. On some machines the cloth passes through a pair of squeeze rolls to extinguish any fire that may be left on the fibres of the cloth.

Singeing is a very useful process for finishing close finished diagonals and similar fabrics. It is much superior to shearing for such goods.

The goods acquire an odor of burnt wool by singeing, which passes away after a time if the cloth is exposed to the air. If finished and wound up immediately after singeing this odor is liable to cling to the goods until made into garments. To avoid this odor it is advisable to singe piece dyed goods before they are colored. Singeing gives white goods a yellowish shade, which can be removed by rinsing in clear water.

(Continued.)

It Is Worth While.

PAUL LAMOITIER.

Collaborator of L'Industries Textile, Paris, Textile Designer and Manager of the Cotton Mills of M. Michalloff & Fils, Moscow, Russia.

To the author of "Is It Worth While?"—

You do not admit as being practical, Monsieur, the use of two systems for calculations in the textile industries.

Then why do you use the decimal system for your calculations?

You are not logical in your reasoning. Will you review your calculations with me?

Usually the width of the reed is

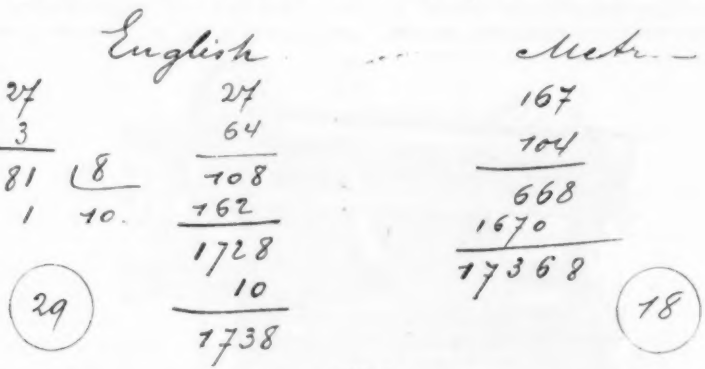


FIG. 1.

first determined according to the given number of threads per inch, by the English, or per centimeters by the metric system.

The width of the cloth as it falls from the loom is known, and it is necessary to increase this to allow for contraction from the reed. In the example which you give you cannot use 64 4/10 inches as the width of the reed for the simple reason that the inch is divided into eighths (1/8), and the weaver can measure only 64 1/2, or what comes nearer, 64 3/8. For indicating the exact width the metric

system certainly has the advantage in the calculation. With that system the width is 167 centimeters, 3 millimeters being negligible in the calculation.

Now we determine the number of ends with the calculations shown at Fig. 1. The advantage rests with the metric system in which but one operation is necessary instead of four.

Moreover, I will say to you that, referring to your Figs. 3 and 4, the advantage will be on the side of the metric system for the following calculations: 1, the length of the cut as it comes from the loom; 2, the weight of the warp per cut; 3, the weight of the filling per cut.

You are compelled to reduce the ounces to pounds, a calculation that is not necessary with the metric system, as all the units are linked together forming one chain that leads to a single and constant base, the meter.

Moreover, it is very unfair to make comparisons with a few figures. It is certain that the metric and decimal system is the most simple, the only logical, the only practical, uniform, stable and universal one.

These numerous advantages have resulted in its official adoption by the following nations: Germany, Argentine Republic, Austria Hungary, Belgium, Brazil, Bulgaria, Chili, Colombia, Denmark, Ecuador, Spain, Greece, Italy, Mexico, Norway, Netherlands, Persia, Portugal, Roumania, Servia, Sweden, Switzerland, Venezuela, etc. In Russia it is permissible, awaiting the time when it shall become official.

These are not countries that spurn progress and they have adopted the metric system simply because they have recognized its advantages. For it was not designed originally for them. It was established first because of the many different standards of weights and measures in France before the Revolution, each province, in some cases each village, having its own. It cannot, therefore, be said that it was an autocratic power that forced the metric and decimal system on the French people. We are, on the contrary, indebted for the metric system to a democratic movement, the most powerful of any on record, and Americans should remember this.

The system wins its own way by reason of its simplicity. What John Quincy Adams said eighty-one years ago, is not true today. For example, the Americans were then tributary to England in their commercial exchanges, but it is not the case today. For them to maintain an old system of weights and measures is to flout at progress.

For woolen yarn the system of numbering by thousand meters is established throughout all Europe. It is used today almost exclusively from Moscow to Barcelona, and all the nations thus included will surely decree that all other systems of calculation for woolen yarn shall be excluded, if for no other reason than the simplification of work in the custom houses.

In conclusion here is the advice of a friend of your great country:

The calculations based on the metric system are the most simple, the most practical, the most exact, the most uniform for all textile materials. It will be a boon to your great nation when that system shall be used exclusively in your country.

Moscow, Russia, September 15, 1902.

The Metric Problem.

The objections raised by the author of "Is It Worth While?" were to the use of two standards of weights and measures, not to the division of one standard in more than one way. There is a wide difference between the joint use of eighths and tenths of an inch and the use side by side of the meter and yard, pound and kilogram.

Decimals were used in the August calculations because they are used here in mill work. The English system is not limited to any one fraction, but allows entire liberty to divide the

unit into as many or as few parts as convenience may require. In this respect it differs from the pure metric system which allows the use of no other fraction than the tenth, and which ceases to be metric when it becomes anything that is not decimal.

With the metric system only two fractions larger than tenths, the half and fifths, can be expressed with one figure; the quarter requires two; the eighth, three; while it is utterly impossible to express thirds, sixths, sevenths and ninths by the decimal or metric system, which is, nevertheless, styled "universal."

In mill work tenths of an inch and tenths of an ounce are used here to express respectively the width of cloth in the loom and the weight of cloth per yard, as well as for any other measurement to which they are applicable.

Why not?

Decimals are not confined to the metric system. This may not be metrically logical, but it is a fact, and if the English width in inches is to be multiplied by the number of threads per inch this can be done in the case under consideration with eighteen figures and one operation, the same as with the metric system.

The claim that the metric system is superior to the English for calculating the weight of yarn per cut cannot be admitted until it has been proved. Why are the figures not forthcoming?

The Anglo-Saxon race is asked to abandon its weights and measures and plunge into the chaos of an indefinite "transition" period that the metric system may become its ultimate standard, and when we ask what the advantage is to be, the only answer that is vouchsafed is "The metric system is a good thing."

In spite of a diligent search for some tangible evidence of the boasted superiority of the metric system in textile calculations, the only specific statement comes from far-off Moscow and rests upon the assumption that we have no right to divide the inch into tenths. If the metric is "the most simple, the most exact, the only logical, the only practical, uniform, stable and universal" system, why is it so difficult to find the evidence of this superiority in textile manufacturing?

M. Lamoitier gives a long list of countries in which the metric system has been officially adopted.

In how many of them do the people use the metric system exclusively?

From the best evidence obtainable, not one.

In France, the birthplace of the system, and in Germany, the confusion of metric and old standards in textile manufacturing today beggars description.

We will call but one witness to show the existing chaos of textile weights and measures between Barcelona and Moscow and that witness shall be M. Lamoitier himself. His excellent work, Traite Theorique et Pratique de Tissage, is a standard French textile textbook and on page 23 is a list of a few systems of numbering worsted yarn in France. No translation is needed to make it clear to English readers and so we show a part of the page at Fig. 1. Turning the leaf we find on page 24 a picture of the existing disorder in numbering carded woolen yarn, Fig. 2.

Apparently M. Lamoitier found words too weak to describe the mix-up, for he resorted to the exclamation point in one place.

The metric system may be used for numbering woolen yarn from Moscow to Barcelona, but so also is the English as well as a vast number of old European systems. In the cotton, linen and silk industries the metric system is employed to a comparatively small extent in Europe, and serves only to increase the mix-up of calculations.

If the metric system wins its own way by reason of its simplicity why do not the French people use it in textile manufacturing? Why are the

textile manufacturers of Roubaix, Fourmies, Sedan, Elbœuf and Lyons still using the ancient weights and measures when the only perfect system on earth has been at their disposal for more than one hundred years? Why is the French weaver still using the inch for counting picks?

70.000 fr. par gramme (1.000 grammes).

Échées arbitraires des fils de laine. — Dans certaines régions de France et d'Allemagne, on conserve les appellations anciennes, ainsi que dans toute l'Angleterre, plus rétive aux changements dans ses habitudes.

A Roubaix (peignés)...	L'échée est de 714 mètres;	l'unité de poids, 0kg,500
A Fourmies — ...	— 710 —	— 1kg »
A Reims — ...	— 700 —	— 1kg »
En Allemagne — ...	— 1.577 —	au kilog. (ancienne)
	ou 1.000 —	— (nouvelle officielle)
En Angleterre — ...	L'échée vaut 560 yards. Le yard vaut 0m,914. L'unité de poids est la livre anglaise (0kg,453).	

FIG. 1.

Now as to the question of autocratic power.

On March 26, 1791, the French National Assembly passed, and four days later Louis XVI gave his perfunctory approval to the law establishing the metric system. Twelve scientists were appointed with feverish haste to execute its provisions, and on the 19th of June, 1791, the king gave an audience to these commissioners. The next night he fled from the Tuileries, was captured at Varennes on the following day and brought back to Paris where he remained a captive until released by the knife of the guillotine on Jan. 21, 1793.

"Down with the old weights and measures" became one of the watchwords of the Revolution. The necessarily slow progress in measuring the meridian of Paris aroused the suspicions of the Revolutionists, and on 3 nivose year 2 a decree signed by Robespierre, the worst of all autocrats, dismissed five of the metric commissioners on the ground that only those

1.000 grammes), à Verviers (Belgique), en Allemagne, également. A Sedan, on se sert encore de l'ancienne échée (1.500 mètres); pour l'unité de poids, 1.000 grammes.

A Elbœuf, l'écheveau vaut 3.600 mètres et le poids, pris pour base, est la livre. La livre se divise en 4 quarts, chaque quart en 10 sons. Un fil de 10 quarts 2 sons équivaut donc à 2 livres 22/40, soit à une longueur de

$$3600 \times 2 + \frac{3600 \times 22}{40} = 9.120 \text{ mètres!}$$

Nous aurons également à étudier plus loin le titrage arbitraire de la soie, du coton, du lin, etc. Regrettons vivement, en passant

FIG. 2.

should be charged with public duties who were distinguished by their "hatred of kings," and ordered more haste in getting the metric system ready for use.

Established by the most arbitrary

government of which history has any record, the compulsory use of the metric system has remained ever since the settled policy of the various French regimes. As far as natural laws would permit it has been forced upon the French people successively but not successfully by the governments of Napoleon, Louis XVIII, Charles X, Louis Philippe, Napoleon III, and the present centralized republic.

With what success?

The extracts we have just made from Lamoitier's work give the answer for the textile industries. It will be time enough for us to adopt the metric system when France sets the example.

Whether the metric or the English system is the better of the two is not the principal point at issue. Each has its merits and defects, but on the principle that one poor captain is better than two good ones, either is better than both together. The work of driving old measures out and new measures in has baffled France for over 110 years, although aided by an exercise of power that would not be tolerated anywhere today.

Shall we invite to America the European chaos of weights and measures by trying to do the same thing here?

IS IT WORTH WHILE?

The Textile Industry and the Metric System.

To secure an expression of opinion from the textile industries upon the introduction of the metric system of weights and measures into the United States as proposed by bill H. R. 2,054, reported favorably last winter to the House of Representatives, we addressed the following questions to a number of the prominent manufacturers throughout the country:

First, Do you favor the immediate adoption of the measure?

Second, Do you oppose it?

Third, Do you favor delaying action until the subject has been calmly and scientifically investigated as in 1817 and in 1866? (See page 672, October issue.)

The response to these inquiries was quite general. Following are some of the replies received, the writers of which represent the cotton and woolen industries in every section of the United States, and which are chosen impartially from those favoring and opposing the system:

Salmon Falls Mfg. Co., Salmon Falls, N. H., O. S. Brown, agt.:—"We are not in favor of its adoption."

Centerville Cotton Mills, Centerville, R. I.:—"We do not favor the immediate adoption of the metric system. We think the matter should have the careful consideration of Congress without any hasty action."

The Beebe-Webber Co., Holyoke, Mass.:—"First, No. Second, Yes. Third, Postpone it forever. Present system is good enough."

Guerin Spinning Co., Woonsocket, R. I., L. W. Ballou:—"We would like you to put us down as favoring the immediate adoption of the metric system in this country, and do not see why there should be delayed action on this scientific problem, which has been well approved in other countries."

Germania Mills, Holyoke, Mass., Wm. Mauer, Sec.:—"First, We decidedly and emphatically favor the adoption of the metric system for the United States. Second, We do not oppose it. Third, We do not favor delaying action until the subject has been carefully and systematically investigated. We feel that immediate action should be taken so that the system could be quickly established. The writer lived in Germany in 1871, when that country adopted the metric system which gave great satisfaction, and the German population at that time regretted that they had not had the system long before."

Riverdale Mills, Great Barrington, Mass., E. D. Smith, Treas. and Mgr.:—"We are not at all opposed to this system, as we think a universal system would be of very much benefit to all concerned. We think if the system is to be adopted at all the sooner the better."

Stafford Mfg. Co., Central Falls, R. I., J. F. Adams, Pres.:—"We prefer delaying action until the subject has been calmly and scientifically investigated."

Dornan Bros., Philadelphia, Pa.:—"We do not favor its immediate adoption, nor yet do we oppose it. We see no reason why our present system should undergo a change, except to facilitate foreign trade, in which we are not interested, owing to the fact that the wool duty increases the cost of our fabrics to such an extent as to render their export almost impossible, notwithstanding the government allows a draw-back of duties on materials entering into exported

goods. The difficulty in the case is to make proof of the actual amount of duty involved by the use of dutiable material.

We favor your third question, believing it wise to postpone action until a fuller knowledge upon the subject is arrived at and a greater necessity arises for its adoption than is apparent at present."

Messrs. Alb. & E. Henkels, Schenectady, N. Y.:—"For our part we prefer the English standard."

Eureka Fire Hose Co., Jersey City, N. J., B. L. Stowe, Vice-Pres.:—"Writer has read the articles in the October number of the Textile World with considerable interest.

"Presuming that the majority of people in this country, like the writer, have no definite opinion concerning the comparative merits of the two systems of weights and measures, we favor further investigation before a compulsory adoption of the metric system.

"More than a quarter of a century ago writer had business at a large machine shop in London. The managing partner had learned his business as some Englishmen do, by practical work in every department from pattern making and moulding to the manager's office, and had taught mechanical drawing in government classes at South Kensington. He had used both systems of measuring in his shop, and his preference was in favor of the English method for marking drawings, as he found that while a mechanic would readily remember slight variations in dimension when designated as for instance 1/2", 33/64", 17/32", 9/16" he would not as well retain metrical equivalents, of one denomination, and that therefore errors were of frequent occurrence when metrical system was employed.

"For mechanical work the metrical system seems to possess no advantage that decimal equivalents of the English system does not."

The Scranton Lace Curtain Co., Scranton, Pa., Paul B. Belin, Gen. Mgr.:—"We do not favor the immediate adoption of the metric system. Second, We are opposed to its adoption. Third, We should say most certainly that it should be investigated scientifically and not left to the decision of the committee of the House of Representatives on coinage and weights, which we have no doubt is composed of men of great capability, yet at the same time they are probably not the kind of men to whom such a question should be intrusted. We do not think there is much danger of this law, in case of its adoption, coming into general use, certainly not in the textile trade, for if foreigners wish to buy our goods they will buy them the way we make them. In our branch of the trade (the lace curtain trade) there is absolutely no question about this, for it has been true in the English branches of our trade that the countries using the metric system, have always bought in yards and inches."

Robeson Mills, Fall River, Mass., H. W. Tinkham, Treas.:—"We can see a reason for articles of manufacture made largely for export being made to metric measurement, but for ordinary cotton cloths, or in fact any cotton cloths, I cannot. That the established system should be overthrown for one just as arbitrary I don't believe is good policy at present, especially when only 5 or 6 per cent. of our cotton goods are exported. I don't think the change would be particularly expensive for mills, or especially bothersome to learn, but we can see no gain in it for us. Then we are firm believers in the fact that the English language and customs are to be more and more universally used all over the world. As it stands today, allowing no especial value in the metric system in saving of time and labor in computations outside of perhaps machine builders, then more persons in the commercial world would be discommoded by any change from the English system than would be by a change from metric to English. We will have to answer your questions: First, No. Second, Yes. Third, Yes, indefinitely."

Johnson & Johnson, Mfg. Chemists, New Brunswick., N. J.:—"We do not favor the immediate adoption of the metric system, but believe that it should be held until the subject has been carefully gone into by all industries interested. It seems to us that an immediate adoption of this law, in many cases, would cause trouble by our operatives not being familiar with the system. Of our 800 employees, we doubt if there are a half dozen who could intelligently use the same; in which case, they would be handicapped in their work. It would also necessitate the changing of all the labels on the various goods that we manufacture, the numbers of which run into the thousands. We therefore believe that we should be very careful and educate and prepare our employees before adopting the same."

S. Rawitser & Co., New York City:—"We are very much in favor of the metric system and should like to see it adopted as early as possible."

American Textile Co., Pawtucket, R. I., Chas. W. Shepard, Mgr.:—"It is our belief that the immediate adoption of the metric system into this country would be most desirable, and we cannot conceive of any valid objection against such or of any argument in favor of further delay."

Glendale Elastic Fabrics Co., Easthampton, Mass.:—"We do not favor the immediate adoption of the metric system, neither do we oppose it, but we do favor delaying action on the subject until it has been thoroughly investigated."

United States Finishing Co., New York City, J. Hunt Smith, Treas.:—"We are heartily in favor of the metric system and hope to live long enough to see it in force in the United States of America, as it is in other advanced and enlightened countries."

A. D. Gleason, Gleasondale, Mass.:—"My answer to your first question is No. To your second, Yes. And to your third, I would postpone action indefinitely."

Lafayette Worsted Co., Woonsocket, R. I.:—"A large proportion of our employees being from Europe, we use a good deal of the metric system for the inside wants of the mill, but we have to use the American measures and weights for the outside relations. Of the two systems we prefer the metric, which is more simple and which makes calcula-

tion easier. We would, if necessary, accept the metric system tomorrow without hesitation."

Arkwright Mills, Fall River, Mass., J. P. Bodge, Treas.:—"Personally I am very much opposed to changing our system, and do not see any reason why we should change our style of figuring so as to compare with countries one hundred years or more behind the times. Why should we care to adopt the metric system of weights and measures any more than we would adopt other styles of doing business, because older countries have a different way of doing things? The old countries are copying us in some things, let them do so in this respect."

Dawson Mfg. Co., Holden, Mass.:—"We are not conversant enough with the metric system to give an opinion, although from what little we know about it we should be opposed to its adoption."

Chicopee Mfg. Co., Chicopee Falls, Mass.:—"We favor delaying action on the adoption of the metric system until the subject has been scientifically investigated."

New York Corduroy Mill, New York City, A. Weyers, Gen. Mgr.:—"The sooner we adopt the metric units in weight, coin and all kinds of measures, the better. The time will come when we will be compelled to do so in order to keep in progress."

Griffon Company, New York City, Ernest F. Greef, Pres.:—"We are in favor of the introduction of the metric system into this country by legislative action on the part of Congress."

The Standish Worsted Co., Plymouth, Mass., E. H. Dorr, Sec.:—"However the metric system of measures and weights would work in abstract scientific calculations involving great distances and large sums, it seems to me that for the peculiar needs of our textile calculations, the present system is excellent. Every practical manufacturer has certain short cuts that he uses in connection with whatever system of calculation he may use. In calculating weights of worsted or woolen yarn, I use the run as a basis of calculation entirely, the standard number, 1,600, lending itself readily to all reckoning having to do with ounces and pounds. The advantages of using this system are well shown in the following example:

"7,000 ends 12 1/2 R 8 70 inches wide, 108 picks.

"Dress warp all 2/40 worsted.

"Weave filling all 2/40 worsted.

"To find weight of yarn required for one yard, this formula is required:

"$208 \times 70 \div 700 = 20.8$ oz.

"2/40s worsted is equal to 7 run. A short cut is possible in any example like the foregoing. If the warp and filling are both 2/40s worsted, adding the number of picks per inch and the number of threads per inch, and pointing off one figure from the right will give the same result. For example: 100 threads plus 108 picks equals 208. Pointing off one figure gives us 20.8, the result in ounces.

"Experience shows that a great many such short cuts are possible. The contention that it is unhandy to have different standard numbers for worsted, woolen and cotton, is true enough, but it is surely not necessary to introduce a metric system to change that. Taking the handiest one of them, the woolen run, why not bring the others to conform to it. In other words, have the same standard number for all of the different kinds of yarn. Even with the present various standards, which are admittedly unhandy, it is only a matter of memorizing a few counts and runs. Anyone who is daily calculating cloth and yarn weights by the present system can easily remember the equivalent of the worsted or cotton number in the woolen run. For instance, even if your mill uses a variety of worsted counts, say from 2/10s to 2/80s, it is no hardship to remember such of those counts, from coarse to fine (in both worsted and woolen standards) as you use. As a matter of fact, when one becomes accustomed to thinking and calculating by woolen runs, the mind instinctively sees the equivalent in runs every time the worsted count occurs.

"Of course, everything and anything that can be done to simplify the work and calculations in our business ought to be welcomed by every practical manufacturer, but it seems to me that it is not in the direction of metric systems that we must look for relief, if relief is needed, but to the perfecting of the best of what we now have, and elimination of any useless and time-destroying hindrances that may obtain in our present system."

Travora Manufacturing Co., Graham, N. C., J. H. White, Pres.:—"We have read with interest your articles regarding the adoption of the metric system of weights and measures, and it is our humble opinion that any change in our present standards of textile calculations will work serious inconvenience and loss to the textile manufacturers of the country. We think such a step without the most careful and profound investigation by the practical men who will be most seriously affected would be putting a load on them that would require years of readjustment and study to lighten."

Charlotte Cotton Mills, Charlotte, N. C., D. W. Oates, Treas.:—"We have to say that we are in favor of the immediate adoption of the metric system."

Talbot Mills, North Billerica, Mass., F. S. Clark, Treas.:—"My impressions are all decidedly favorable to the adoption of the metric system. I do not feel that I am sufficiently familiar with the objections to say that I favor its immediate adoption. I think a thorough and scientific investigation should be made before its adoption."

Ludlow Cordage Co., Boston, Mass., C. N. Wallace, Treas.:—"My experience has been entirely with the American system, and while the metric system if it could be made universal might be desirable, my prejudices are entirely with that to which I have been accustomed. I should be perfectly willing, however, to leave this matter to the investigation of such a commission as is suggested in your third question."

Hargraves Mills, Fall River, Mass., Seth A. Borden, Treas.:—"Without going into the merits of the metric system as compared with the English, and on this I am not competent to judge, not having investigated the matter sufficiently, but

it strikes me there is one serious objection to changing our standard of measurement. I do not know the custom of other countries, but I know in this country a great many goods are sold at a so-called popular price: 5c., 10c., 12 1/2c., or 15c. per yard, and so on; and the meter being longer than the yard, I think the same tendency will prevail, and be extremely difficult to change the popular price when changed from a yard to a meter. It seems to me that the manufacturer will be liable to a very serious loss when the changes are first made."

Indian Spring Woolen Company, Madison, Me.:—"We have read the article on pages 673 and 675 of the October issue of the Textile World. We feel satisfied that it would be a great mistake to make any change in the present system of weights and measures. I think that to pass the bill making the use of the metric system compulsory would be detrimental to the textile industries in this country, for the people employed in the industries today have become so used to the present system that it would simply mix up things in such a way that it would make it impossible for them to do the work as they do it today, until several generations had passed away. I most assuredly oppose it."

A Mill Manager:—"I am in favor of the immediate adoption of the metric or decimal system. I have been overseer of weaving and designer abroad in Belgium, France and Germany, and for the last 8 years have occupied positions from loom fixer up to my present situation. In all my experience I have never come across a case where the metric system of computation was not preferable to the English. The examples as set by the writer of the article on page 675 are very poorly chosen. For instance, in the first place he makes a die for the English sample as follows: 1 8/10 by 2 4/10, or as written by the decimal system, 1.8 by 2.4 equals 4.32.

"Now by using tenths of inches the writer of the article is unwittingly using the metric or decimal system which has for a basis the subdivision in 1/10, 1/100, 1/1,000, etc. Leaving aside the use of decimal he makes the English die 4.32 square inches to facilitate his figuring, but goes to work and makes a die for the metric system 40 × 50, which in future operations necessitates a division by 2.

"Again he counts the number of threads in 3 centimetres which necessitates the division by 3 later on. The German calculation which he is giving looks complicated because 2 systems of yarns have been used. So would an English calculation if many systems of yarn were used, of which there are nearly as many as there are shires.

"The trouble with the investigations that took place in the past concerning the adoption of the metric system is that they were made by men educated to the English system, and though they were men of large minds, they were narrowed down by the force of habit (the habit of the English system).

"The ending of the article by S. S. D. is exceedingly poor and shows that in his endeavors to belittle the metric system he does not use his best judgment.

"It is the dreamers, those that have gazed at the stars, metric or otherwise, that have made science what it is today, not the tillers of the soil, be they of English or any other country.

"The reference to the use of the inch by French weaver is correct so far as it shows how hard it is to eradicate old usages, but all drafts made in France require so many picks per decimetre. No mention is made of pouce, but the habit is as much inborn as the use of different dialects by the English shires or French provinces."

Allen L. Taft, Spencer, Mass.:—"I have read the article on pages 673-675 of the present issue of the Textile World. It seems to me that the careful study of the metric system in the years 1817 and 1866 by the students and authorities as stated is sufficient and their conclusions ought to be decisive. I certainly am not in favor of changing to the metric system either now or at any time in the future, for I have no desire to establish a school in my mill to instruct those of the help who have to do with the yarns and measures, in the new system. I believe that the old adage which runs something like this, 'You cannot teach an old dog new tricks' would apply in this case."

Interlaken Mills, Providence, R. I., E. C. Bucklin, Treas.:—"While personally preferring the ordinary English units for use in calculation for the principal fabrics in preference to the metric units the question of adopting the latter is largely affected as to the benefit we should obtain in dealing with foreign countries. This should, in my opinion, have more careful investigation, principally as the statement has been made by some prominent economist that the English system was being used more generally at the present time than it was formerly by the large manufacturers of textiles in countries that have heretofore used the metric system almost exclusively. The adoption of the metric system by our government would of course mean eventually the adoption of it by the whole country, and very properly so, as the use of both systems would cause endless confusion."

Tennessee Mfg. Co., Nashville, Tenn., Geo. M. Goodwin, Pres. and Treas.:—"This question of proposed alteration in the system of weights and measures now observed in this country, and which governs the entire business transacted, is a question upon which we have a very decided opinion, and one that is independent of any fine spun theories, advanced by scientists or professionals; but is rather concerned in the convenience of the immense majority of people in this country whose business will be subjected to confusion and intricacy of detail, without any conceivable benefit to them, as a result of the change.

"We not only oppose its immediate adoption, but equally oppose it intoto, now and forever; for it is inconceivable to us that, at any time in the future, will it ever appear to the interest of this country to make such a basic and fundamental change in the system of weights and measures in vogue where the benefit, or convenience, is to be experienced by such an infinitesimal minority of the people in this country. In fact, no one living in the vast interior of the country can ever hope to benefit by such a change, and but few of them will ever be induced to make use of it, however much law there may be injected into it;

and taking a practical view of it, rather than indulge in argument, based on any scientific fact, or comparison, it is a movement agitated by a few, who live at the ports, influential and selfish, as is most common nowadays, and who look at their own interests only, disregardful of that larger number who must, perforce, submit to the more influential minority. We do not take the time to enter into any elaborate argument, but with a very positive opinion and an intelligent conception of the movement we are pleased to go on record as one textile mill very much in opposition to the present or the future adoption of the metric system in this country, either by the government or for the country. Our present system of units, tens and hundreds, ounces and pounds, quarts, gallons, pecks and bushels, inches, feet and yards, with all subdivisions, are good enough for us."

Coleman Mfg. Co., Concord, N. C., W. C. Coleman, Sec. and Treas.:—"The system is all right if adopted universally, and we would favor its adoption, but do not think it would be well to act hastily in the matter. We think the system would work as well in this country as it has in Europe. It is easier calculation and is done more rapidly. We trust it may meet the approval of the textile manufacturers of this country."

Greene & Daniels Mfg. Co., Pawtucket, R. I., Henry C. Dexter, Sec.:—"I will answer your three interrogations at once by saying that I favor an immediate adoption of the metric system in this country through national legislature or state legislature if advisable. I cannot imagine a time when it would be more convenient to make a great change than the present. If there is any benefit in the change the sooner we make it the longer we shall be benefited by it. We see the value of the metric system daily in our monetary system and what is true of that is equally true of the adoption of the metric system in all branches of business."

Stonewall Cotton Mills, Stonewall, Miss., T. L. Wainwright, Sec.:—"We have given the adoption of the metric system very little or no thought, but we favor its adoption, and think it would be a very good thing."

Mobile Cotton Mills, Mobile, Ala., W. W. Dunlap, Pres.:—"We did not read carefully the article on the metric system in your issue for October, but glanced through it and from your examples it looked to us as if it took more figures for the metric system than for the one we are already using. If that is the case we can see no advantage whatever in making a change, and unless the metric system is very much shorter we can see nothing whatever to be gained by making a change. As it is, everyone is familiar with the present system and it would make considerable trouble and confusion to change to the metric system, and unless there is a good deal of advantage to be gained by the change we cannot see the use of it."

The J. & H. Clasgens Co., New Richmond, Ohio:—"We answer as follows: First, No. Second, Yes; Third, No use investigating further as far as textile business is concerned, as former investigations and actual use and experience have demonstrated, beyond all doubt, that it is impractical for all textile industries."

W. H. Kaufman, Athol, Mass.:—"To your first question I answer, No; to the second, No; to the third, Yes."

Warren Manufacturing Co., Warren, R. I., A. Schaer, Agt.:—"It is my personal opinion, based upon years of observation both in this country, France and England, that the metric system is the system for numbering cotton, and much more convenient for all cloth calculation, if adopted throughout, viz., weights and measures, lineal measures, and weights in kilograms, but if calculations have to be based on yards, and English pound should prefer the English numbering of yarns."

Abbot Worsted Co., Graniteville, Mass., A. J. Abbot, Treas.:—"While we are favorably disposed toward the system we have not had occasion to use it in our own business, and so do not feel like giving it unqualified approval. We are in favor of your third proposal of having the subject calmly and scientifically investigated."

Chatham Mills, Philadelphia, Mullineaux, Clegg & Co.:—"We have carefully read over the articles that appear on pages 673 and 675 of the October issue, and beg to say, that we favor the immediate adoption of the metric system, and the introduction of same into this country."

Lawrenceville Mfg. Co., Lawrenceville, Ga., A. E. McDonald, Agent:—"I do not favor the immediate adoption of the metric system at this time. I oppose on the grounds that there are not 25 per cent of the manufacturers that know anything about its use; consequently, I favor delaying action until the subject has been calmly and scientifically investigated, as in 1817 and 1866. I wish to say in connection with this, that I know something of the metric system and feel that it would take a number of years to get the thing working advantageously throughout the whole country."

Provo Woolen Mills Company, Provo City, Utah, Reed Smoot, Manager:—"Below find our answers to the questions asked in your letter: 1st, Do you favor it's immediate adoption? No. 2nd, Do you oppose it? Yes."

Massachusetts Mills in Georgia, Lindale, Ga., H. P. Meikleham, Agent:—"Your favor of the 23rd received, and in reply will say that I read the article on 'Metric System' in your October number.

"I would say that I consider the 'Metric System' could be used to great advantage in shops and factories in this country, and it would certainly simplify matters a great deal.

"You are doubtless aware that a good many shops use this system."

Foreign Trade and the Metric System

BY A MANUFACTURER FOR EXPORT.

In the October issue, the article, "Metric vs. English," interested me greatly, as did Prof. Crosby's defense of the metric system, "It is Worth While."

The professor's statement that the comparison of the number of figures in a calculation in metric and in English proves nothing, would apply equally well to his own advocacy of the decimal system. It must be admitted that the moving of a decimal point to the right or left is a saving of time over multiplying or dividing, but this proves nothing for the system, or, to use his own words, this is a "glittering generality." The reducing from one denomination to another is the least of our troubles. This point might appeal to one at first thought and is almost the only argument which can be made exclusively in its favor.

Regarding the constants, 1,600, 840, 560 and 300, for woolen, cotton, worsted and silk respectively, if a change is demanded, why not place all on the basis of some one of these with which the manufacturers of England and the United States are already familiar? This would greatly simplify the problem without overturning the system of the entire nation.

Another argument advanced in this article reads as follows: "We have now entered the markets of the world with goods to sell. We must put up our packages in such shape as to attract the buyer." Every mill having an export trade has done that very thing for years. Goods are put up folded in yards or metres, as suits the purchaser. If he so desires, the metres are stamped upon the pieces, or, if the customs regulations of the receiving port require the weight in kilograms to be marked upon the outside of the package, in a well systematized packing room this is done with absolutely no inconvenience and all of the foregoing without those "costly errors and the loss of much valuable time." An hour's work on the part of a clerk will suffice to arrange a convenient table of metric equivalents which can be used for all time. Orders calling for goods to be put up under foreign weights and measures are of common occurrence, not only under the metric system, but under Spanish, Chinese and other systems. This brings us to another phase of the question.

If the metric system is made compulsory in the United States, what assurance have we that other nations may not adopt some different standard? At the present time the French system is by no means universally popular, as its advocates would have us think. At the time of its conception Great Britain absolutely refused to have anything whatever to do with the idea, and in addition to that, threw the whole weight of her influence against it. And her influence is still a factor which must be considered in a case like this.

Europe is but a small part of the world and is destined to become even smaller in the future, so far as a market for our goods is concerned.

It is said that "As the Mountain would not go to Mahomet, Mahomet must go to the Mountain." With Germany's standard in a chaotic state, England and the United States certainly form a very respectable sized nucleus for a universal standard. Why should we not choose to be the Mountain rather than Mahomet?

Admitting that improvements might be made in the English system, would it not be far better to introduce them one at a time rather than bring about such an "upheaval of nature" as the bill now pending in Congress promises?

[The above communication comes from a gentleman engaged in the manufacture of textiles for export. Ed.]

—When one chases wit he often catches stupidity.—Monlesquien.

The Cotton Goods Trade of Manchuria.

A valuable report upon trade with Manchuria has been made to the State Department by our consul, Henry B. Mills, who is stationed at Niuchwang.

Speaking of textiles he says that the climate of Manchuria is very cold, the thermometer falling as low as 20 to 50 degrees F. below zero, according to the locality. It would be expected that in such a climate there would be an excellent market for woolen goods, but such in not the case. Very few woolen goods are used. Padded cotton garments and sheep and goat skins constitute the clothing of the poorer classes, and padded silks and fine skins and furs are worn by the well-to-do.

Cotton for padding garments, cotton yarn for making cotton cloth, and cotton goods constitute much over half of all the imports. The total imports, native and foreign, into Niuchwang port for the year amounted to $24,813,692, and in this, cotton, cotton yarn, and cotton goods figured to the extent of over $14,660,000. The great item in the trade of Manchuria, therefore, is clothing.

The rough life of these hardy people requires a strong and substantial cloth, much more so than is demanded in the milder sections of China, where the conditions of life are much less harsh.

The supply of the entire trade can be roughly divided into three equal parts: One-third from native goods manufactured by hand-looms from native cotton; one-third cotton drills, jeans, and sheetings from the United States; and one-third, consisting chiefly of cotton yarns, from India, England, Japan, and China.

Indian yarn to the amount of $2,858,700 arrived during the year, and has captured the market. Japanese and Chinese yarn aggregating $333,000 and $189,847 respectively, were also imported. This yarn is taken into the interior, and is woven into cloth by hand-looms in the homes of the natives.

Native cloth, made on hand-looms in other parts of China, was imported to the value of over 7,000,000 taels, $5,131,000. This, together with the imported yarn, constitutes over half the value of cotton shipped into Manchuria.

From this, it will be seen that the greatest competitor that America has in this market for her cotton goods is Chinese cotton goods made from yarn from the mills of India and from the mills of Shanghai and other places in China and manufactured into cloth on hand-looms by the Chinese themselves. The native cotton cloth is considered stronger than the imported, and its popularity is due to this fact. Samples of the native cloth, also samples of Japanese and Indian yarn were sent to the State Department with the consul's report.

Chinese nankeen cloth, 18 inches wide, costs from 8 to 12 cents Mexican (3.8 to 5.7 cents) per yard. American cotton cloth 30 inches wide ranges from 15 to 25 cents Mexican (7.2 to 12 cents) per yard; American cotton cloth 34 inches wide ranges from 12 to 22 cents Mexican (5.7 to 10.5 cents) per yard.

Yarns Nos. 6, 8, 10, and 16 are imported, forty packs to a bale of 360 catties (578.8 pounds), at the following prices:

Indian yarn: 6s, 9c.; 8s, 9½c.; 10s, 10¼c.; 16s, 13¼c.

Japanese yarn: 6s, 9¾c.; 8s, 10c.; 10s, 10¼c.; 16s, 13¾c.

So far as known, cotton yarn is not imported from America; it comes mostly from India, Japan, and China. The cheap labor of these last three countries is probably the reason for this, especially when it is remembered that much raw cotton is shipped from the United States to Japan and China.

The importation of Japanese cotton yarn has fallen off very materially since 1899, when it amounted to $707,847. This year it was $333,953, a reduction of over one-half. During this

same period, the importation of Indian yarn increased from 5,396,800 pounds in 1899 to 5,846,666 pounds in 1901. For a number of years, this article has been steadily growing in favor in Manchuria.

Cotton flannel is growing in popularity in Manchuria, and, if special efforts were made to increase its use, a large and permanent market could be created. American cotton flannel possesses the most important requisites for clothing in this portion of China, viz., strength, warmth, and cheapness. Of foreign underwear and clothing, little is known as yet, and only very small quantities have gone far inland. It seems that this would be a splendid opportunity for our manufacturers to enlarge their trade by judicious advertising. In 1899, the importations from America amounted to $40,814, and in 1901 to $76,880. From Japan, in 1899, they were $8476, and in 1901, $6889.

The value of cotton blankets imported in 1899 was $19,535; in 1901, it amounted to $44,429. This increase was in Japanese goods, and is an evidence of the careful attention paid by the Japanese to China's wants. These goods will probably meet with an increasing demand, and sales should grow to very large proportions.

Another class of cotton goods that is becoming popular throughout Manchuria is corduroy—mostly brown—used for jackets.

A Percentage Scale.

In combing wool and cotton it is frequently desirable to ascertain what percentage of noil is taken from the stock. In the July and August issues there were described several methods of calculating this percentage, all of which involve more or less labor and necessitate stopping the comb with consequent loss of production, and a percentage scale was referred to. In Die Eigenschaften der Gespinste, by technical description with illustrations (Figs. 1 and 2) of this apparatus. We will omit that portion relating to the purely scientific principles upon which the scale is constructed, as this would be of practical value only to the builder of the instrument.

As the illustrations clearly show, a three arm lever is suspended at a central point O. One of these arms serves as a point whose extremity swings in front of a circular scale.

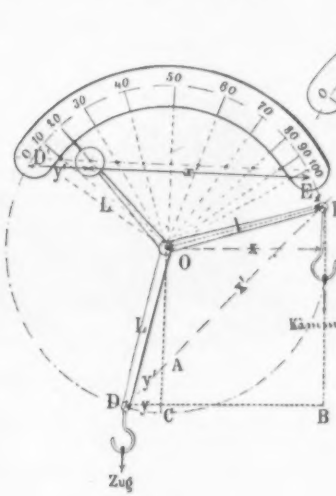


FIG. 1.

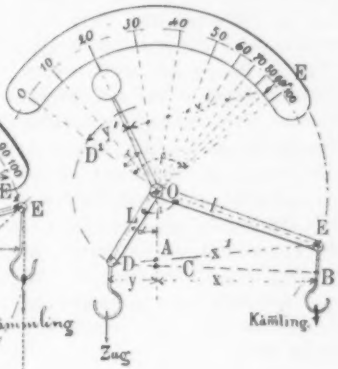


FIG. 2.

At the extremity of each of the other arms is attached a hook, in one of which, D, the top, in the other, E, the noil is placed. The difference between the weights of the top and noil causes the lever to swing on its axis, and find a new balance, bringing the pointer to a new position in front of the dial, which is marked to indicate the percentage that the noil bears to the weight of both noil and top.

The heavier the noil as compared with the top, the farther the pointer will be carried to the right of the zero point.

The percentage of noil in most cases is below 30 per cent. and when the arms of the lever are of equal length, as at Fig. 1, the 30 per cent. covers but a small portion of the dial, necessitating fine divisions and increasing the difficulty of reading the figures.

To overcome this difficulty, Karl Gegauff, engineer, shortened the lever on which the top is hung, so that the weight of the noil would carry the pointer over a greater part of the circle, giving coarser divisions and increasing the facility with which the dial can be read.

The Waste Silk Industry.

HENRI SILBERMAN.

III.

(Continued from October.)

Drying the scoured waste is the next operation and is accomplished by spreading the material on wooden racks either in the open air or in artificially heated drying rooms. In the latter case the hot air, 104 deg. F., is drawn down through the waste by mechanical means. Continuous drying machines are also used in which the waste is carried with an endless apron back and forth and dried in a relatively short time (one-half hour at 168 deg. F.).

Ventilation is maintained by a fan and from 2,200 to 2,640 pounds of waste can be dried daily with a consumption of 55 pounds of coke, the drying space being 49 feet long and 5 to 6 1/2 feet wide.

Before using the dry material it is saturated with a mixture of water, soap (4 per cent.), and olive oil (2 per cent.). Other materials used for this purpose are glycerine and an emulsion of animal oil with soap or a solution of sal ammoniac. This process is very similar to the oiling of wool before carding, the liquid being sprinkled on the stock either with a sprinkling can or an automatic machine.

The oiling machine consists of a slowly moving apron carrying the silk, a rapidly revolving brass roller partially submerged in the solution

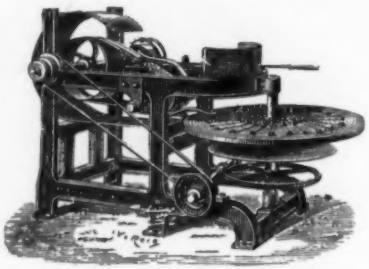


FIG. 3.

and a stiff rotary brush that comes in contact with the brass roller and converts the solution adhering to the surface of the latter into a spray that falls on the silk. After this treatment the waste is left for several days to allow the solution to thoroughly impregnate the material.

The material is next run through a threshing machine which separates the individual silk filaments from each other without breaking them and at the same time removes foreign matter such as sand, dirt, dust, the residue of silk worms, etc. Fig. 5 is a perspective and Fig. 6 a sectional view of this machine.

The waste is spread in a layer one and one-half to three inches thick on a table, T, which revolves once a minute; the silk is held in place by rods and hooks, b. The waste as it re-

volves receives about eight strokes a minute from twelve to fifteen leather or rubber whippers, g, riveted to an endless leather belt, L, which is about seven inches wide. These whippers

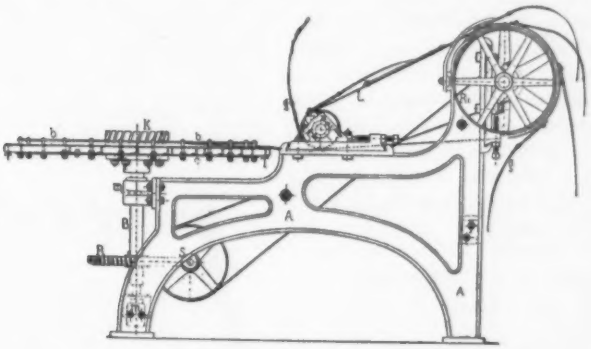


FIG. 4.

are thoroughly oiled to increase their efficiency and durability.

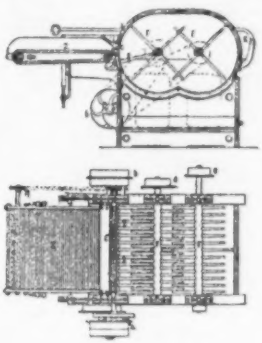
Under the smaller pulley is fixed a leather cushion having a wooden foundation which receives the impact of the metal plates by which the whippers are fastened to the belt. The adjustment of this cushion is very important for the efficient working of the machine.

Behind the large pulley, R, is a metal guard.

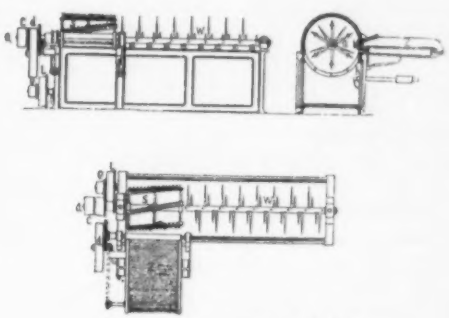
The movement of the table is reversed frequently, after each turn or two, until the process is completed. The pulverized foreign matter falls through a grating into a receptacle provided for it and is removed from time to time.

The production of a silk threshing machine varies according to the construction, between 132 to 264 pounds of cocoons or 110 to 220 pounds of silk yarn waste per day.

Low grade silk waste and hard cocoons must be treated in a more energetic way, the machine for this purpose being similar to the pickers and beaters used in preparing wool and



FIGS. 5 AND 6.



FIGS. 7 AND 8.

cotton. Figs. 7 and 8 show one style consisting of two shafts, FF, on which are mounted arms which beat the waste supply by a feed table, Z.

Figs. 9 and 10 show another machine in which the stock is first manipulated by a spiral cylinder, S, running six turns per minute. It is next opened up by the revolving arms, W.

A beater of medium size will manipulate from 1,760 to 2,200 pounds of waste a day, and requires from one to one and one-fourth horse power.

The air in the beating room becomes very impure by reason of the dust from the silk and makes the occupation injurious to the health of the operatives.

Low grade silk waste is also cleaned at this stage by a process similar to the carbonization of wool. The material is saturated in a 4 per cent. solution of sulphuric acid for half an hour, then carbonized and dried at 176 to 212 degrees F. Muriatic acid gas is also used for this purpose.

(To be continued.)

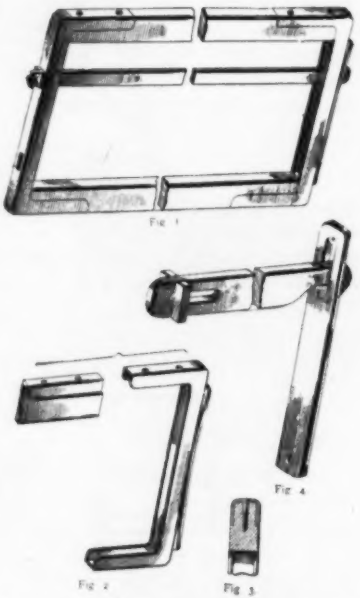
New Heddle Frame.

The accompanying illustrations show a heddle frame for which a patent has recently been obtained in this country. The inventor states that heretofore frames of this class have been constructed of upper and lower wooden bars connected at their ends by thin metallic, in many cases adjustable, strips, while in others various stiffening means have been resorted to to increase the efficiency of the frame; all these constructions possess objectionable features, notably unnecessary weight, which causes undue friction when the frames are operated and weakness of the ends. Various devices have been devised for locking the heddle-bars in the frame. In each instance substantially the same objectionable features exist. The new frame is said to be light and rigid, permitting the ready guiding and maintaining of the frames with the least possible friction.

A further object of the invention is to provide a device for detachably securing the heddle-bars in its frame.

In the drawings, Fig. 1 is a perspective view; Fig. 2 is a detail perspective view of one of the end bars and the end of an upper bar; Fig. 3 is a cross-section; Fig. 4 is a detail perspective view of a heddle-bar and the means employed for locking the same in the heddle-frame. The bars are connected at their ends by end bars formed of channel-iron, the ends being bent at right angles and embedded in the outer sides of the bars, where the respective bars are secured together.

Hence a complete heddle-frame is constructed providing the necessary strong and durable, at the same time cheap, wooden bars, while the end



bars are equally as strong and rigid, yet light and durable.

The whole outer surface of the frame is rendered perfectly flat, presenting an unbroken wearing-surface should the adjacent frames strike each other while being reciprocated—a condition often experienced when the usual harness is in motion.

The heddle-bars are passed through slots in the end bars and are held by a "lock-block" and catch. Each bar has a slot near one end, in which operates a block, while at the opposite end of each bar is a notch co-operating with the latch. The block consists of an H-shaped piece of metal

equal in thickness to the width of the slot, this slot being approximately the length of the sides of the block.

To apply the lock-block, one side is passed through the slot, whereupon it is given a quarter-turn, the connecting section of the block being the axis. The block is thus held against lateral displacement. The bar is now passed through the slots, the block limiting the movement in one direction, while the notch is engaged by the spring-catch, securely holding the heddle-bars against all possible displacement, yet permitting them to be readily accessible when so desired.

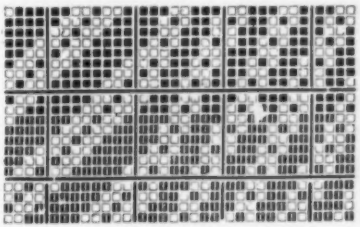


Fig. 215.

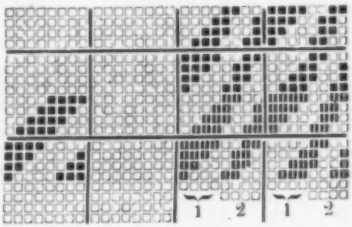


Fig. 216a Fig. 216.

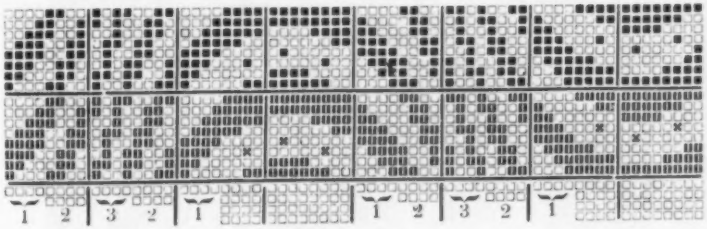


Fig. 217.

A Guide to Weaving.

BY IVO KASTANEK.

V.

(Copyrighted, 1902, by Guild & Lord.)

DEFLECTED, UNDULATING AND CURVED TWILLS.

Wherever the direction of a twill is changed a broken place occurs. If the twill line is broken frequently enough to change its general direction, a curved twill line is formed which is converted into an undulating line by combining small and large breaks in the proper order.

Figs. 215, 219 and 220 are deflected twills.

Figs. 216, 218 and 221 are undulating twills.

Figs. 217 and 222 are curved twills.

Fig. 216a is the foundation twill for the undulating twill, Fig. 216.

The threads enclosed in brackets are woven in unbroken order and between each of these and the adjacent group is found a break in the twill. The number indicates the angle of the twill line; No. 1, 45 deg., etc.

Each weave is indicated separately by the divided squares.

BROKEN TWILLS.

These are formed by breaking the twill so that a filling takes the place of a warp twill and a warp the place of a filling twill.

Broken twills are distinguished from deflected twills by having the warp and filling twills transposed instead of having the twill line merely deflected. This transposition is repeated at intervals until the pattern is completed.

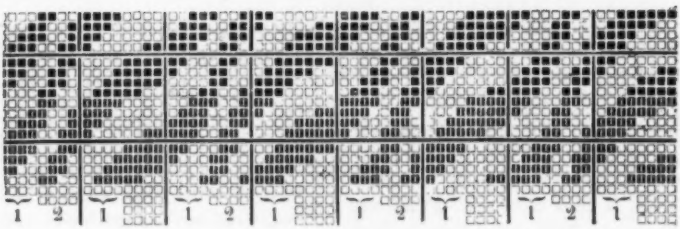


Fig. 218

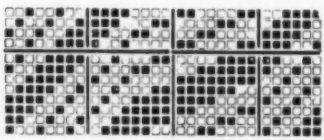


Fig. 219.

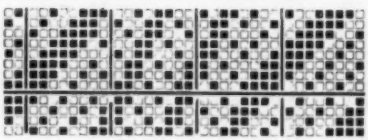


Fig 220.

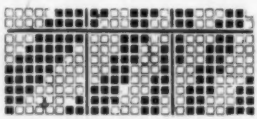
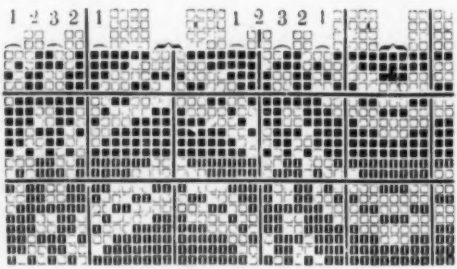


Fig. 221.



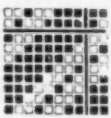


Fig. 222a

Fig. 222.

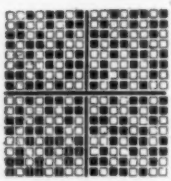


Fig. 223.

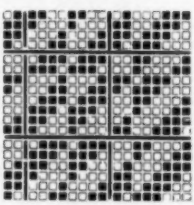


Fig. 224.

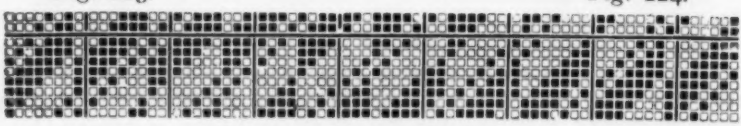


Fig. 225.

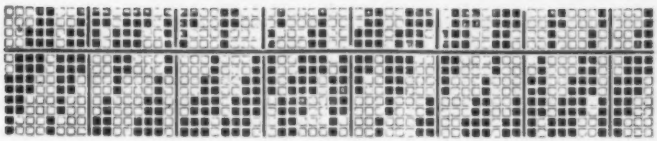


Fig. 226.

Fig. 227.

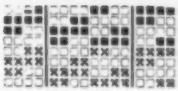


Fig. 228.

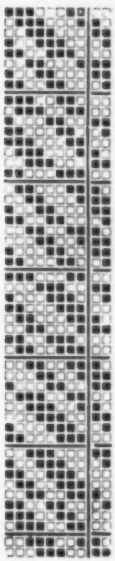


Fig. 230.

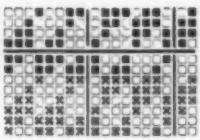


Fig. 229

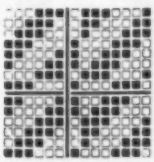


Fig 232.

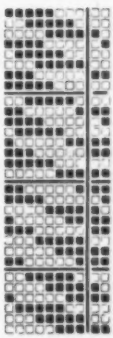


Fig. 231.

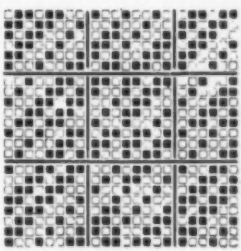


Fig. 233.

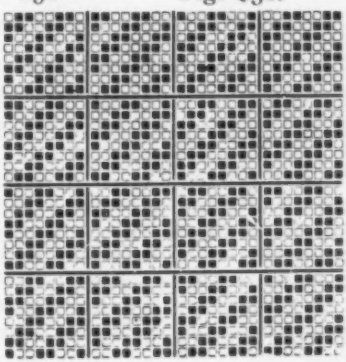
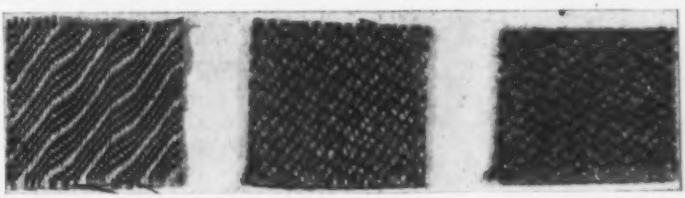


Fig. 233x



219a. 223a. 246a.

The twill line can be broken in the same weave in the direction of both warp and filling, examples of which are shown at Figs. 224, 232, 233 and 233x.

To avoid having too many threads in the pattern, a difficulty that is very apt to arise with the weaves, the ground weave and one thread more are used. Fig. 233 is an example in which the break occurs every 11 threads and the ground weave every 10 threads.

Fig. 2.

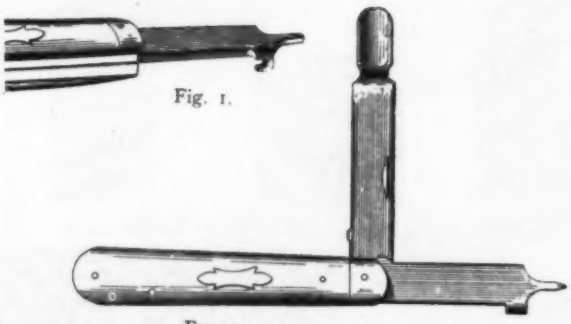


Fig. 1.

Fig. 3.

Figs. 223, 225, 226, 227, 228 and 229 are weaves with the twill broken in the direction of the warp.

Figs. 230 and 231 have the twill broken in the direction of the filling.

Figs. 224, 232, 233 and 233x have the line broken in both directions.

(To be Continued.)

A Loom Fixer's Knife.

At Figs. 1, 2 and 3 is shown a knife, recently patented, and intended for the use of loom fixers. The inventor states that it may be used to punch leather and has a blade for use on a picker-stick, and with a lateral shoulder which may be employed for taking out eyelet-screws.

When the blades are folded, the hooked shoulder of the awl-blade will be in position to be grasped to unfold that blade; when open to its fullest extent the awl blades will serve as a part of the handle for manipulating the punching-blade. With this arrangement, freedom is secured for each blade the same as if they were mounted at opposite ends of the handle, while by mounting them at the same end of the handle the awl-blade has a double function in that it forms at times a part of the handle for the punching-blade.

Fig. 1 is a perspective view showing the knife with the punch and hook blade opened to its full extent and in position to form a portion of the handle for the second or boring or cleaning-blade. Fig. 2 is a side elevation of the hook and punch blade. Fig. 3 is a view showing the blades at right angles.

Humidity in Worsted Spinning.

The following question has been proposed by La Societe Industrielle de Mulhouse:

What is the effect of water added to the wool during certain processes of its manufacture into worsted yarn, as compared with the water absorbed by wool by virtue of its hygroscopic qualities?

In his reply to this question, M. Jean-Jacques Muller gives an account of his researches as to the quantity of water found in wool during the different stages of manufacture; he shows by diagrams the temperature and the hygrometric condition of the air in the carding, combing, preparing and spinning rooms.

In the carding room, Buenos-Ayres wool contained 37 9/10 per cent. water at the beginning, 22 2/10 per cent. at the end of the process. Australian wool enters at 26 2/10 per cent. and comes out with 21 per cent. water.

During the combing process by the Heilmann system the wool contains about 17 per cent. water. After combing and before spinning, the quantity of the water varies from 15 1/2 to 16 1/2 per cent.; after spinning, the wool contains 15 to 16 per cent. moisture. The diagrams indicate a decrease of the moisture in the air after the mill is stopped. In the rooms used for the Heilmann system of combing a temperature of 30 to 35 deg. C. is not necessary.

A writer in L'Industrie Textile commenting on this report states that in France the temperature in the Heilmann combing rooms averages from 18 to 22 deg. C., except in summer, when it may rise to 30 to 32 deg.

Making Weavers' Drafts.

A process for making weaving drafts has recently been patented in this country. The inventor states that hitherto a sheet ruled with a series of cross-lines an equal distance apart both ways, commonly called "point-paper," has been used, and the entire pattern and ground has been carefully painted on this by hand.

By the new process a transparent stencil of any waterproof sheet, such as oiled paper, preferably long-fibred Japanese rice-straw paper soaked in varnish and rolled under heavy pressure, is used. This is passed into a machine like a typewriter, geared so that the feed in both directions shall be the same as the distance between the lines of the point-paper subsequently used or a multiple of such distance, so that supposing the type were a simple dot these dots would be spaced the same distance apart.

Punches are used instead of type, but the motion of the machine can be precisely the same as that of the typewriter. More than one form of

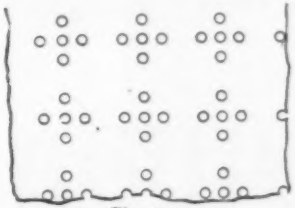


Fig. 1.

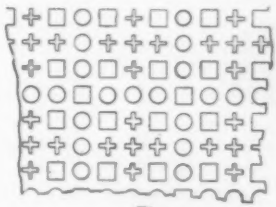


Fig. 2.

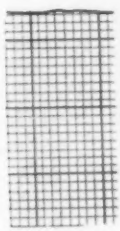


Fig. 3.

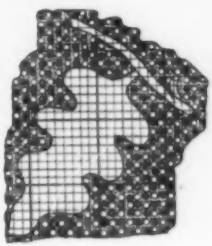


Fig. 4.

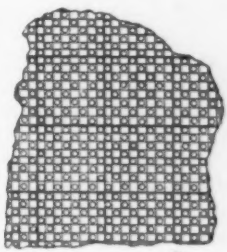


Fig. 5.

punch may be employed, but usually a single punch making a round or square hole is used with several stencils with different colors, one for each weave of the ground employed.

The pattern is then thrown on point-paper by means of a specially arranged optical lantern, and the outline of the image thus projected is drawn in by hand. The stencil is then placed over the ruled paper, with the punched centres exactly registering with the centres of the small squares of the paper, and the color is rubbed through the holes on the ground. In this way a number of different weaves in different colors can be applied successively to the same design.

Figure 1 shows a templet with one form of punch-hole. Fig. 2 is a templet with three forms of punch-hole; Fig. 3, a ruled sheet; Fig. 4, a portion of a completed pattern; Fig. 5, a portion of the templet or stencil used for producing the ground shown in Fig. 4.

The sheet of point-paper is placed on a suitable frame and the reflection of the pattern thrown on it by means of a mirror. The size and position of the pattern on the sheet having been adjusted, the pattern is now drawn or painted off by hand. The ground is now stenciled in with its respective colors by means of one or a series of stencil-plates, as before described.

Roubaix has been called the "Bradford of France," and the comparison is complete. Roubaix and Bradford are about the same size; the majority of workers in both cities are engaged in the production of dress goods.

—If you want to be spared, spare others.—La Fontaine.

—The public; a heap of pennies which united become a coin of gold.—Balzac.

—Elect me your representative and see that I will do no better than the others.—J. Troubat.

A New Fabric.

A section of a chenille fabric, recently patented, is shown at Fig. 1, and at Fig. 2 is a view of the back of the same cloth. The inventor states that the new texture belongs to that class of woven fabrics in which are combined party-colored face weft-threads, back weft-threads of spun yarn, stuffer warp-threads separating the face and back weft-threads, and binder warp-threads tying together

Fig. 1.

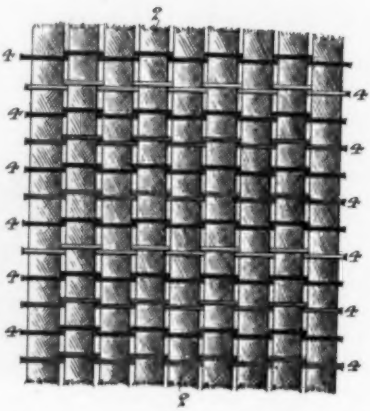


Fig 2.

the face and back weft-threads, the object being to produce a fabric of this character having on the face a pattern formed by party-colored chenille weft-threads, and on the back a pattern in imitation of matting and formed by the back weft-threads beaten up so closely as to prevent any showing of the chenille face weft-threads between them and presenting either a plain face or one having stripes of color across the same produced by the binding warp-threads.

The fabric is composed of face weft-threads, 1, of party-colored chenille, back weft-threads, 2, of spun yarn,

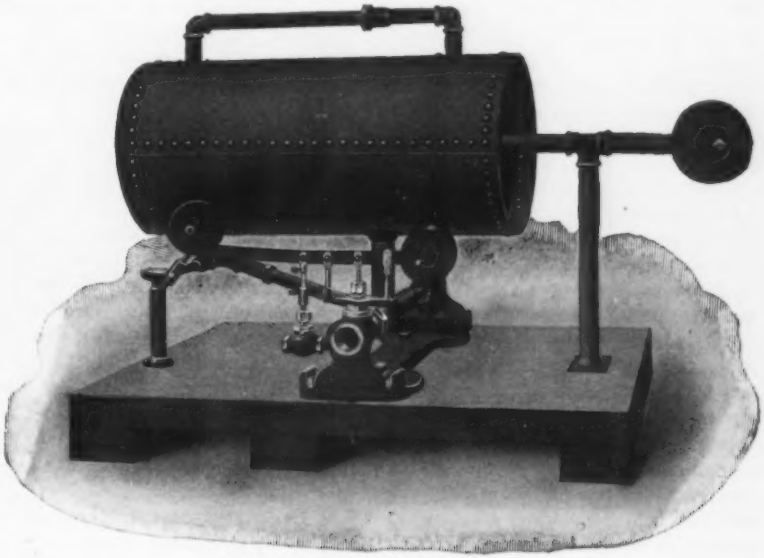
stuffer warp-threads, 3, interposed between the face weft-threads and back weft-threads, and binder warp-threads, 4, which serve to tie the face and back weft-threads together and confine the stuffer warp-threads between them.

The back weft-threads are of such size and are beaten up so closely that the chenille face weft-threads are not visible between them. Hence these back weft-threads impart to the back of the fabric a color or tint which may be plain or of colors differing from each other and from the color of the back weft-threads, thereby producing upon the back of the fabric the effect of stripes running in the direction of the warp. This imparts to the back of the fabric a matting effect which renders the goods reversible, either face of the same being acceptable.

Binding warp-threads of the thickness necessary to produce a striping effect upon the back of the fabric can be used without affecting the face pattern, owing to the fact that on the face of the fabric the warp-threads are covered and hidden by the chenille fur of the face weft-threads, 1, and yet these heavy binding warp-threads will not prevent close beating up of the back weft-thread, owing to the fact that the latter are large and soft, and hence close around the binding warp-threads.

The Morehead Return Trap.

The condensation from any steam heating or cooking apparatus must be removed. The more quickly the condensation is removed the drier and more effective will be the heating surfaces. It is the greatest extravagance to waste it, as it is pure water, and hot. The most effective way to utilize the heat it contains is to deliver it into the boiler before it is diffused. For handling condensed water quickly and with economy a return trap is excelled by no other device.



THE MOREHEAD RETURN TRAP.

The Morehead return trap is constructed of steel, the heads and longitudinal seams being closely riveted and calked, to withstand any pressure carried on the boiler, without breaking, which is impossible with cast-iron traps. It is the embodiment of simplicity, there being no rubber

joints to blow out or leak, and only one valve, which is on the outside. All working parts are on the outside, in plain sight, and easily accessible. There is no ball or globe float inside the receiver to collapse, leak, rust or stick.

This trap is located six feet or more above the water-line of boiler. The water from the condensing surfaces is forced by the pressure of steam behind, through a pipe leading to the trap with a swing check valve close to the latter. As soon as sufficient water has entered receiver to overcome weight on arm, the receiver tilts down allowing water to pass through discharge pipe, at the same time opening the steam valve, which has a pipe connected with dome of boiler.

By equalizing the pressure of the surface of the water in receiver with that in boiler, the water, in simple obedience to the laws of gravity, flows into the boiler. As soon as the receiver is empty it tilts back as before, and again refills. The trap is prompt in opening and closing, its action being due entirely to gravity. When once set up it requires no further attention. It takes the water from the condensing surfaces whether they are above or below the water level in the boiler, and automatically returns it to the boiler at the temperature due to the pressure at which the steam is condensed. There is no outlet by which the steam can be wasted. It is quick and positive in delivering the water into the boiler against any pressure, and regardless of fluctuations of pressure. It supplies all the water needed in the boiler from the main water pipe, providing there is enough pressure on main to lift the water to the trap, thus performing the duties of a pump or injector. It operates equally well with high or low pressure coils, or coils using exhaust steam, allowing no condensation to collect in them.

For a boiler plant of 200 h. p. having an efficiency of 65 per cent. and an evaporation of 6,900 lbs. of water per hour from and at 212 degrees under average conditions, the saving effected by a Morehead return trap for a year is said to be more than twice the cost of installing one large enough to handle such a plant.

Where a Morehead return trap is not employed, the usual way of handling condensation is by means of a pump. A comparison of the two methods shows many points of advantage in favor of the former. A pump will not lift water at a temperature exceeding 212 degrees; a Morehead return trap will. A pump consumes an extravagant amount of steam to do a very little work.

For example, an ordinary duplex boiler-feed pump requires from 90 to 120 lbs. of steam per horse power hour. A common slide valve engine seldom consumes less than 40 lbs. per horse power. The Morehead return trap consumes less than 10 lbs. per horse power. The pressure is admitted to the surface of the water, and is automatically shut off before the tank is empty. The steam used is only such as is condensed by the latent heat passing from it into the water in the tank, which is all put back into the boiler.

It is claimed that a Morehead return trap requires practically no attention; needs no lubrication; will not race or run away; never sticks; is noiseless; requires little room and no foundation.

Full information, prices, etc., of the Morehead return trap may be obtained by addressing the American Blower Co. of Detroit, Mich., or any of their branch offices.

Memoirs of a Veteran Master Mechanic.

EBEN GOULD.

VII.

(Continued from September).

Several weeks after my return, there appeared to be something out of order with the beam engine. Mr.

B—— sent to Providence for a man to come and look it over and see what repairs were needed. The man came and found among other things that the valve shaft bearings were worn more than half off and that the valves would have to be sent to the Corliss works to be renewed.

This was found out about 8 A. M. Sunday; there were no Sunday trains running in those days. The Providence man said if they were carried down to Providence that day, they could be ready to come back Monday night, so that the mill need be stopped but one day. Mr. B——, however, would have to be told, and they would have to do as he said, either get a carriage and drive down that day, or if he would rather wait, go down by train on Monday.

Now the question was who was to see Mr. B——. There was a brother-in-law, a nephew, and several others about, but not one of them dared go and see him. Then the brother-in-law said:—

"Gould, you go."

"All right," I said, taking one of the valves on my shoulder.

"What are you going to do with that?" he asked.

"I am going to see Mr. B——, and tell him what is wanted," I replied.

"Don't carry that up to his house, he will be awfully mad."

"Well," I said, "you can go if you like without it, but if I go, that valve goes with me."

Off I started and, arriving at the house, set the valve down and rang the bell. Mr. B—— himself came to the door.

I showed him the worn condition of the shaft, from which he understood at once what was needed. Then I told him what Corliss' man had said about going to Providence. He told me to get a team and go myself, stay until it was done and bring it back as soon as possible.

Back I went to the mill, and told the men what he had said. You ought to have seen how ready every man of them was to go to Providence; they were all willing to take a ride.

While I was gone to see Mr. B——, his son E—— had come into the engine room, and he seemed to favor that one of the others should go and not me. Then the Providence man said:—

"Gould, I would like to have you stay here and work with me." He saw that the controversy was getting too hot and took that way to settle it.

I then gave in, and he said to young B——, that he should not want any other help and so the room was soon cleared. Then he asked what there was about B——, that all the men were so afraid of him. I told him there was nothing the matter with Mr. B——, only they could not make him understand what was wanted and he would be grouty on that account, neither could I have told him so he could understand, but I carried the worn-out valve shaft to him, and he could see at once for himself what was needed, and that I knew of no pleasanter man than Mr. B——.

Well, the man that went to Providence got there all right, found the boss of the engine works, who at once started on the repairs of the valves, working all Sunday night, and got the job ready to come the latter part of Monday. If the man that carried the valves had stayed and brought them back as ordered, the mills would have been started on time Tuesday morning, but a smart idea got into his head, and he thought how much pleasanter it would be to ride home without a load, so he saw an expressman and told him to express the valves to Dedham, as soon as they were finished. He started for home towards night Monday, arriving here reported what he had done and said the valves were almost done when he left, but expressing must have been very different in those days from what it is today, for the valves never showed up until the following Thursday. This caused a needless stopping of the mills for three days. C—— had a good time while in Providence, put up at a hotel,

where his bill was $20.00, which if I had gone would have only been for the horse, as I had many friends and relatives.

One day I was sent for to hurry down to the brick mill as there was a break down of the shafting. When I got there, I found that a four-inch shaft connecting the water wheel to the main shaft of the mill driven by the engine was broken. Mr. B—— was there, and we soon had the pieces cleared away so as to start the mill. Then Mr. B—— said:—

"Get a team and have the shaft carried to Canton to be welded or have a new one made."

He never thought that such a job could be done in his own shop, and was regretting the time it would take before the wheel would be running again. I told him all the team I wanted was the mill wagon to carry the broken shaft up to the shop and bring it back when done.

"I am not going to Canton with a job like that," I said.

He seemed to doubt my ability to weld a four-inch shaft, but was pleased to hear that it could be done. The blacksmith was an extra good hand at most work, but had never welded a shaft before. He had not been very long at the mill, having been hired just before I first went there to work. He was willing to do the job, if I would go ahead and let him be striker.

"No, you just stand in your own shoes and use the hammer," I said. "I can help you by using the sledge."

Luckily, I found a piece of four-inch iron at the shop somewhat larger than the broken piece. The smith had never seen a piece of iron welded; all the welding he had ever done was lap welding. When I told him I was going to make a butt weld, he was glad of the chance to learn how it was done. Well, we went at it and got as handsome a weld as I ever saw. While we were putting in the licks, I with the sledge and the smith with the hammer, some one came in and stood behind me. I had not seen him, but as we stopped striking I said:—

"There now, if Uncle Tom wants to go to Canton, let him go, he won't see a better weld."

On looking round I saw Mr. B—— standing there with a big smile all over his face.

I worked with the smith and another man all the rest of that day and all night, and had the wheel ready to start on time next morning. Mr. B—— told me that the shaft was broken once before, and they sent it to Canton and the wheel was stopped a whole week. That job was a pretty big feather in my cap, and there were no more shafts sent to Canton for repairs, as such work was all done in the shop.

Shortly after the dyehouse fire in 1857, an addition was built on to the lower mill. It was of brick, 80 by 50 feet, four stories, and was to be used for gigging, weaving, carding and spinning, with another brick building 100 by 50 feet, two stories, for a picker house. This building was separate from the other buildings, having an engine and boiler room for itself. During the first year of the war with the South, this building was connected with the others by extending the new four-story building to the picker house by filling in the space between with the building 142 feet long.

The first of these buildings was for machinery to replace that destroyed by the dyehouse fire; the other, to enlarge the works. In this building the first broad Crompton looms were put; all the looms in these mills up to that time were narrow for making 3/4 goods. The new cards and jacks were, I believe, all from Andover, Mass., as were also the pickers.

At different times, I learned there was trouble about the goods being shaded, some spots or strips being lighter and others darker than they should be. I once told Mr. B—— that my father was always very particular about his picker rooms and that I had often heard him say that it was a very

poor plan to try to mix the stock in the cards or on the jacks or looms, the place to mix stock was in the picker room, and that it could not be properly done anywhere else. Mr. B—— was satisfied that was the right way and during his time nothing more was heard of clouded goods.

The engine connected with the picker house was bought at some auction sale in New York. It was built for some mining company that had failed. It was a very old fashioned affair with square bed piece and had never been quite finished. The shaft had to be turned to fit the balance wheel, the eccentric had to be fitted and several other parts, and it was put in place and worked all right until after the last addition connecting the picker house to the mill was built, when it had to be replaced by a larger one in 1862, which was built by the Corliss & Nightingale Co., of Providence. That engine is running now, and has been in use for over forty years. At that time, I considered the Corliss engine the best stationary engine in the market, but of late years others have been equally as good, among them being the Brown engine, made at Fitchburg, Mass.

(To be Continued.)

Treating Waste Fibrous Material.

The accompanying illustrations show a machine, recently patented in this country, designed for separating the worthless portion from fibrous waste. The inventor states that heretofore it has been the custom to feed the raw fibrous materials to a purifying-machine either by hand-labor distributing the raw materials upon a feeding-apron or by occasionally filling a feeding apparatus which acts automatically as a distributer of the materials upon the apron; but in all cases the wastes or droppings from the purifying process fall upon a bottom apron which continuously returns them to the front of the machine, where they are gathered by hand-labor and returned to the feeding-apron for reaction by the machine, or they are returned automatically by a continuation of the bottom apron to the feeding device.

In the first case the operator has an opportunity to distinguish and separate that portion which can be used again. In the latter case, though some labor is saved, everything is returned to the purifying-machine, and the process is repeated over and over

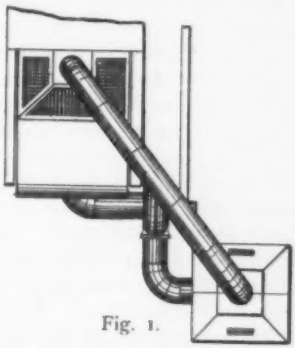


Fig. 1.

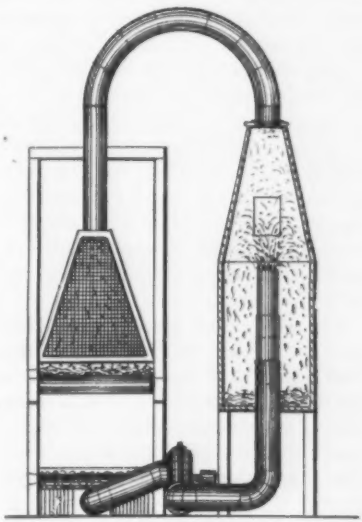


Fig. 2.

at a waste of time and power and to the deterioration of the product.

The object of this new machine is to supply an auxiliary device for automatically receiving, separating,

and returning only the useful portion of the wastes to the original machine by a continuous circulating system so arranged that the impure materials will deposit themselves and the better portion be carried back to the machine, saving time and labor and preventing the handling of worthless materials.

Fig. 1 is a plan of the new machine; Fig. 2, a front view, the separator being shown in section. The action of the machine is as follows: By means of the fan, the waste products that are dropped from the apron into the receiving-pan are sucked by the fan through pipe and delivered into the separating-chamber. There the impure parts settle, and the purified part passes on through pipe and cage back to the feeding-apron of the original machine.

Method of Making Figured Pile Fabrics.

The method which has recently been patented in this country consists in subjecting a portion of the pile of a plain woven pile fabric to the action of colors and subjecting the remaining portion of the pile to the action of a pile-destroying medium, then steaming the fabric to fix the color applied and to aid in the final destruction of the pile treated with the pile-destroying medium, and finally removing the destroyed pile from the fabric.

Fig. 1 is a like view of the fabric after its passage through the printing-machine. Fig. 2 is a similar view of the finished fabric. Fig. 3 is a cross-section of the fabric shown in Fig. 1, the section being on the line, 4 4, of Fig. 1; and Fig. 4 is a sectional elevation of the finished fabric shown in Fig. 2, the section being on the line 5 5, of Fig. 2.

An ordinary pile fabric having a back, A, and pile, B, without a design is woven in the usual manner on a suitable loom, so as to show the pile B either in gray or any desired shade. This pile fabric is now passed through a fabric-printing machine having a driven cylinder which forms the platen at the back of the pile fabric, the pile, B, of which is exposed to

Fig. 1.

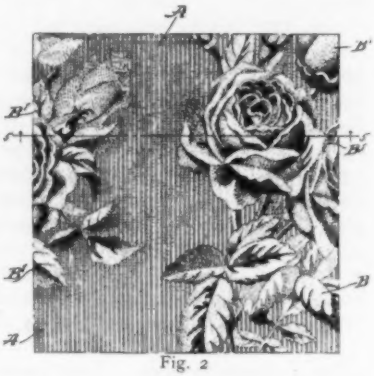


Fig. 2

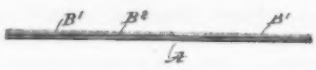


Fig. 3

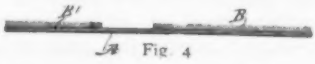


Fig. 4

the action of printing-rollers bearing the pattern on their surfaces.

Some or all but one of the printing-rollers are connected with color-fountains for supplying the desired different colors to the printing-rollers, which in turn apply the colors to the portion, B', of the pile and which por-

tion, B′, is in relief on the back, A, in the finally-produced fabric.

The remaining printing roller or rollers are connected with a fountain for supplying a pile-destroying medium, which in turn is carried by this roller or rollers to that portion, B^2, of the pile, B, which is to be removed, and which lies between the portion, B′, of the pile. Thus the portion, B′, of the pile is colored and the remaining portion, B^2, is treated with a medium tending to destroy it.

The destroying medium varies in nature according to the fibres used for forming the fabric—that is, when the back A is of vegetable fibre and the pile B of animal fibre, the inventor prefers to use a soda solution. If the back, A, is of an animal fibre and the pile of a vegetable fibre, then he uses sulphuric acid.

After the fabric has passed through the printing-machine it is steamed, so that the colors applied to the portion, B′, of the pile are fixed. During the steaming process the steam aids the destroying medium in the final destruction of the portion, B^2, of the fibres, and then the portion, B^2, is finally removed from the fabric by passing it between brushes or the like after the steaming process is over, so that the brushes remove the destroyed portion, B^2, of the fibre to leave the portion, B′, in relief and colored according to the design.

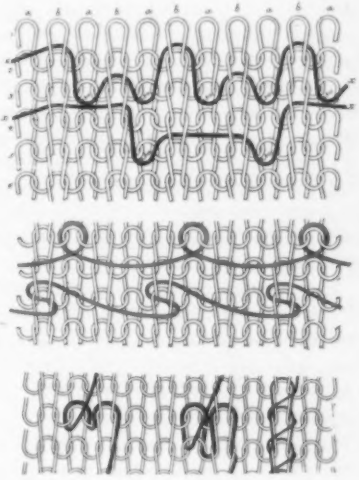
A Knitted Fleeced Fabric.

The accompanying illustrations show various modifications of a knitted fabric for fleece goods, recently patented by Robert W. Scott of Scott & Williams, Philadelphia.

The object of the invention is to distribute the points of attachment of the fleecing-yarn more uniformly than usual and to insure the more effective covering of the face of the fabric with the fleece produced by the brushing of the projecting portions of said yarn.

In the drawing, 1, 2, 3, 4, 5, 6 and 7 represent successive courses of stitches interlooped so as to form a ribbed fabric, some of these stitches being drawn in one direction, so as to form the face wales, a, of the web, and the alternate stitches, b, being drawn in the opposite direction, so as to form the back wales of the web.

Combined with the knitted wales thus disposed are courses of fleecing-yarn, x, this fleecing-yarn passing between the face and back wales of the fabric and being projected on the back of the fabric, so as to form loops, y, which extend backward beyond the back wales, b, and can therefore be brushed in order to form the desired fleece without any injury to the knitting-yarn of which the back wales, b,



of the fabric are composed.

It is usual to employ a course of fleecing-yarn for every other course of the knitted fabric, the fleecing-yarn passing between the stitches of the face and back wales of every other course and being projected beyond the stitches of the back wales; this is said to be objectionable, because if, as frequently happens, the fleecing-yarn is visible between the wales on the face of the fabric it imparts to those courses of the fabric in which it is introduced an appearance differ-

ing from the intervening courses, and therefore detracts from the desired appearance of uniformity on the face.

In order to overcome this objection, the fleecing-yarn is engaged first with a stitch of one course and then with a stitch of another course of the fabric. Thus, as shown in the drawing, the uppermost fleecing-yarn, x, passes first behind a stitch in the rear wale, b, of course 1, then behind a stitch in the rear wale, b, of course 2, then behind a stitch in the rear wale, b, of course 1, then behind a stitch in the rear wale, b, of course 2, and so on, the next fleecing-yarn, x, being likewise disposed in respect to stitches in pairs of rear wales, b, of courses 3 and 4, and so on.

By this means the tying-points of each row of fleecing-yarn are distributed uniformly between stitches in every other wale, b, of one course of the fabric and stitches in alternate wales, b, of the next course of the fabric. Hence if there is any showing of fleecing-yarn between the face wales of the fabric such showing is uniform throughout said face and does not detract from the uniform appearance of the latter.

This zigzag method of attachment of the fleecing-yarn to the stitches of the body of the fabric also insures a more effective covering of the back of the fabric by the fleece produced by brushing the said yarn. Hence the appearance of the fabric both as to face and back is improved as a result of my invention.

The Passing of the Paste Brush.

BEN SHAW.

When George Dunbar came to the Danville Gingham Mills to take charge of the finishing rooms he found that his path was by no means strewn with roses. His predecessor was generally considered a "good fellow," and when the "old man," as the agent was usually called, "fired" him because he resented his wholesale and un-called-for sarcasm, and retorted in like manner, we boys naturally felt a little "sore," and, to a greater or less degree, lived in the secret hope of the new-comer's downfall and, incidentally, the "old man's" chagrin in consequence.

We were doomed to disappointment, however. Dunbar was a hustler. He not only "kept up with the procession," but he got in the lead and made the procession "hump" to keep up with him. He had many suggestions to make for saving time and labor, and we had to admit that his ideas so far, at least, were all right. Every few days he would call for some change, occasionally a radical one, until Mr. Carter, the agent, began to wonder where it would all end, and if his new-found hustler might not pull him into some disagreeable hole and leave him there.

The "old man" was sitting in my room one day, talking over some mill matters (I was at that time the mechanical superintendent), when Dunbar appeared at the door and said he wanted to speak of a little change.

His wants always took the form of a "little change."

"Well, let it come," said the sarcastic Mr. Carter. "I have seen so much modesty in your requests, Dunbar, that I feel like granting any wish before you express it."

I watched to see if the "worm would turn," but Dunbar never felt the chill a particle.

"Modesty or no modesty, Mr. Carter, I am tired of seeing three men juggle paste brushes all day, and then not keep up with the work of ticketing."

"And I presume you have come to suggest that we ask our customers to ticket their own goods."

"Not a bit of it. Just you make me one or two simple contrivances and I will save you two men."

"Take down the gentleman's wants, Wilson," turning and addressing me,

"and when you get in into shape I will talk it over with you."

With that he left us.

Dunbar had made a few rough sketches, and from these, with some explanations, I worked up the drawings, which are shown at Figs. 1 and 2, and submitted them to the agent for approval. This being obtained, I sent them to the shop to be made up.

Fig. 1 shows the details of a light cast iron box or trough about 8 inches in length over all, 2 1/2 inches wide, 2 inches deep at the shallow end and 3 inches deep at the mouth E. The sides, FF, are to be rabbeted, a lip left at the end, G, and a small flange at the bottom of partition, B. A light frame made of hoop iron, over which is to be stretched a piece of open-weave cheese cloth, is placed under lip, G, resting on rabbets, FF, and flange B, and held in place by a button, D.

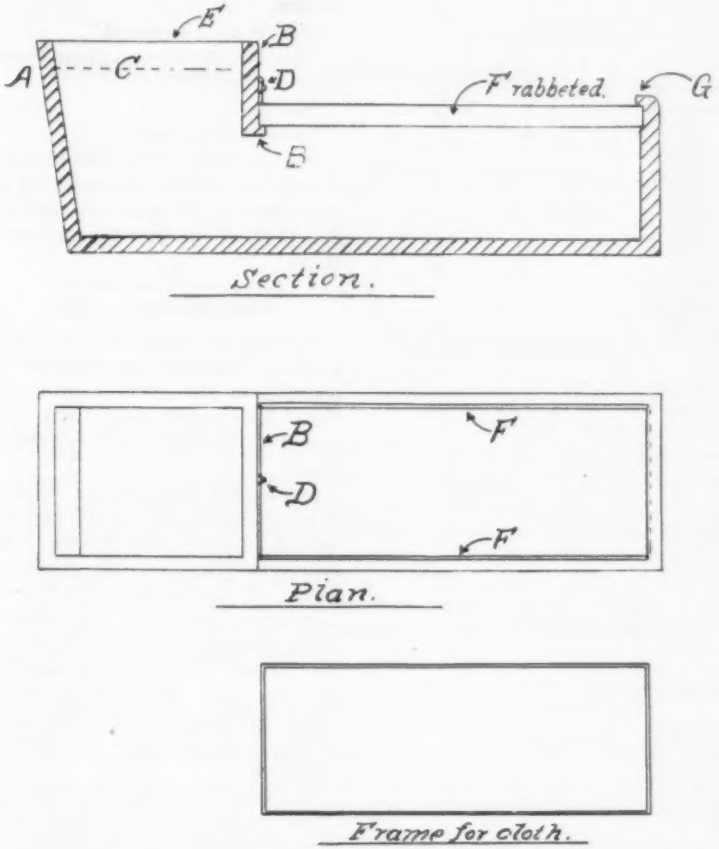


Fig. 1.

This box is filled with paste until it rises in the mouth up to about the point, C, and, if the cloth is not stretched too tightly, it will be raised slightly above the edges of the box. A small ticket can then be quickly wiped

across it, and if the paste is of the right thickness, a great saving of time and dirt is effected.

Fig. 2 shows the details of Dunbar's scheme for applying paste to a large ticket. It consists of a wooden roll about 12 inches long and 10 inches in

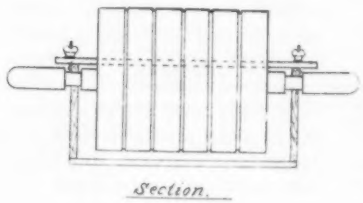


Fig. 2.

diameter, set into a wooden box 14 inches long, 12 inches wide, and 7 inches deep. The ends of the box are cut down to form the bearings for the roll. Five or six quarter-inch grooves are turned in the roll, and a short handle extends out on either end, by which it may be turned occasionally to get fresh paste. At the back of the roll, forming a partial cover to the box, is a board which nearly or quite touches the roll, removing the superfluous paste. This board is made adjustable by means of slots, A, and butterfly nuts. In this way the amount of paste may be regulated.

Some little time elapsed before it entered my mind to inquire as to how these new devices worked, but one day I met Dunbar in the yard and asked him if they were giving satisfaction.

"Doing all I expected."

"Has Mr. Carter seen them working yet?" I ventured.

"Oh, yes."

"What did he say?"

"He watched a while and then said, 'I don't see where your claim for saving comes in. It keeps two men hustling cloth all the time for one man to ticket.'"

Ring Spinning on Cops.

The device shown in the accompanying drawings has recently been patented in this country by a party from Manchester, Eng., and is intended to facilitate ring spinning on cops.

In ordinary ring-spinning machines, it is not practicable to spin and wind onto the bare spindle or onto a very thin tube placed on the spindle, by reason of the excessive drag or tension brought upon the yarn or thread when the latter is being wound onto the smaller end of the cop; that is to say, on those diameters of the copchase which approximate more or less nearly to the diameter of the spindle itself.

In order to obviate this difficulty, disks are sometimes mounted on and caused to rotate with the spindles, the yarns or threads on their way from the thread-guide to the ring-travelers and spindles bear against the edges of the said disks, producing friction between themselves and the disks, which enable the latter to assist the yarns or threads to drag around the travelers, and thereby reduce the tension on the said yarns or threads.

When using these disks, however, it is customary for certain reasons to make the spindles of uniform diameter throughout the length of that part

of them on which the cops are wound, so that the holes through the centres of the cops are practically cylindrical, and consequently do not fit the pegs of the shuttles ordinarily used for weaving cops spun on mule-spindles, which latter are taper.

The object of this invention is to provide means whereby ring-spinning, doubling, and twisting spindles on which the disks are used, may be made taper, like the ordinary mule-spindles, in order that the cops may have taper holes through them instead of cylindrical, so as to fit the pegs of the shuttles used for weaving cops spun on a mule.

Heretofore in order to cause the disk to rotate with the spindle the latter has been made of triangular or other polygonal form, or of circular section with one or more flats, or with one or more longitudinal grooves on its side or sides, the hole in the disk being shaped accordingly.

The spindle at the part where the cop is wound on, is, as above stated, parallel-sided in order that the disk as it rises during the formation of the cop may continue to be driven by the spindle, whereas if the spindle were made taper, like a mule-spindle, the disk would cease to be driven by the spindle when it reaches a part of the latter too small in dameter to drive it.

By this invention the spindle is made tapered, like an ordinary mule-spindle, and in order to cause the disk to rotate with the spindle at whatever part of the latter it may be situated at any given moment during the formation of the cop, the disk is provided with springs, which bear against the sides of the spindle with sufficient force at any part of the length to produce friction enough to enable the spindle to rotate the disk.

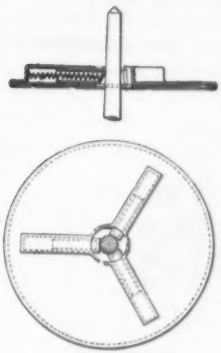


FIG. 1.

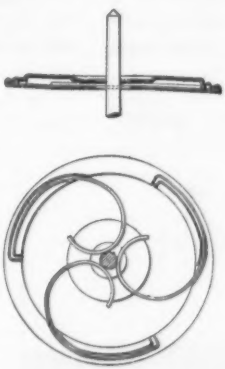


FIG. 2.

FIG 3.

Figs. 1 and 2 show cross sections and ground plans of two forms of these springs, and Fig. 3 a spindle equipped with the disk.

A Stop Motion for Knitting Machines.

An automatic stop motion for knitting machines, recently patented, is shown at Figs. 1, 2, 3 and 4.

Figure 1 represents a perspective view; Fig. 2, a plan of a portion of the locking mechanism employed, the parts being shown in operative position; Fig. 3, a plan of the parts seen in Fig. 1 in disengaged position; Fig. 4, an end elevation of the shipping-lever and spring-actuated pin or abutment employed, showing the position the parts assume after the circuit has been closed.

The operation is as follows: The parts normally appear as seen in Figs. 1 and 2, and it will be apparent that as long as the yarn passes freely

through the opening between the plates, the operation of the knitting-machine will be continuous.

If, however, the free movement or travel of the yarn through the opening should be checked for any reason, as by the yarn being knotted or in any other improper condition to be knitted into the fabric, it will be apparent that as the machine continues the operation of knitting a pull will be exerted on said yarn, which will depress the lever into substantially the position seen in dotted lines in Fig. 1, and the yarn will leave the recess in the lever and will slip off the rod, and the spring now acts to pull the lever upwardly, thereby depressing the extremity and causing the electric circuit to be closed by reason of the contact of this extremity with the contact-point.

The circuit being closed, it will be apparent by following out the electric connections that the magnets will become energized, thereby drawing the armature and the finger in the direction of the arrow, b, whereupon the arm will be moved in the direction of the arrow, c, and by reason of the tension of the spring the arm will move in the direction of the arrow, d, and the lever will move in the direction of the arrow, e. At this period the stem will be thrown into the position indicated in Fig. 4, and by reason of the tension of the contractible spring the shipping-lever will move in the direction of the arrow, f, and the knitting-machine will stop, it being of course understood that the extremity of the shipping-lever communicates with suitable belt-shifting mechanism or other similar devices (not shown) which control the operation of the knitting-machine.

To reset the machine, it is necessary to place the parts in the position seen in Fig. 1, after which the operation of knitting is continued until another ir-

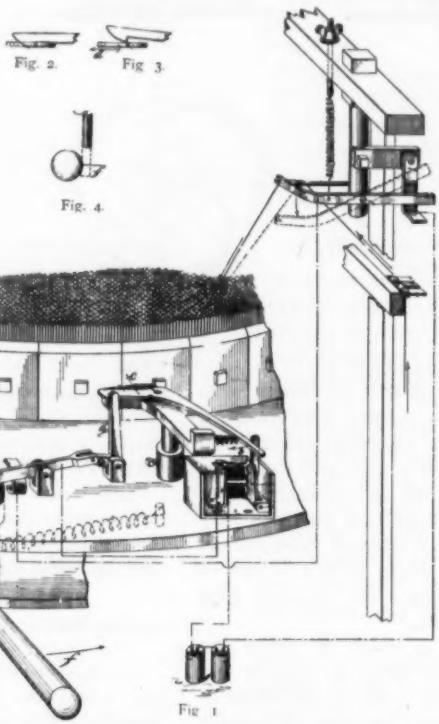


Fig. 2. Fig. 3.

Fig. 4.

Fig. 1

regularity or knot in the yarn reaches the opening, whereupon the circuit closing and tripping operations above described prior to the stopping of the machine take place.

A Registering Cloth Board.

A cloth board with a registering device has recently been patented in this country. A card or tablet is so arranged that it is ordinarily concealed from view, but can be drawn out for inspection or to mark the length cut from the piece.

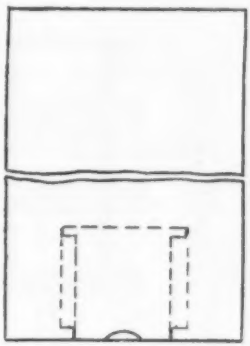


FIG. 1

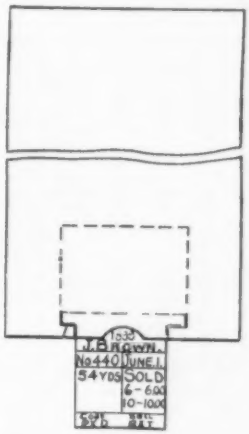


FIG 2

FIG. 3

Fig. 1 shows the board with tablet in normal position; Fig. 2, with the card drawn out; Fig. 3, an end view showing construction of board. The card, while acting as a check on the clerk, also facilitates the taking of stock, as the length of piece unsold is made known by an inspection of the tablet.

Increasing the Lustre of Silk.

A process for increasing the natural lustre of silk, recently patented in this country, consists in taking the skein of silk fibre as it comes from the hydro-extractor after being dyed, stretching it while damp, and subjecting it in this condition to a temperature of about 120 degrees F. until completely dry.

The old process consists in drying the fibre before placing it in skeins two or three at a time on stretching-posts in a steam chest or stretcher, where it is treated to a bath of live steam, which is admitted into the steam-stretcher, completely enveloping and moistening the fibre for about three minutes while it is being stretched; this, the inventor claims, leaves the silk damp after being stretched in the steam-chest, and in drying afterward invariably shrinks and loses its lustre, while the new process has in practice given better results, producing a more brilliant and permanent lustre, which is retained and shown in the finished fabric.

Fig. 1 is a side view of the machine; Fig. 2 is a vertical section, showing the arrangement of the wet skeins of silk fibre and the stretching mechanism which prevents the fibre from shrinking while being dried or after it is dried.

A stretching machine is erected, from which the skeins are suspended, either in horizontal or vertical series, on poles, rods, or other suitable supports, the number depending on the size of the machine. The damp skeins are taken from the hydro-extractor after dyeing, are suitably mounted and stretched on these supports, and are kept there in a stretched condition to prevent the contraction or shrinkage of the fibre while being dried. When the moist fibres have been tightened on the stretching-machine, the temperature of the room is regulated, as hereinbefore set forth.

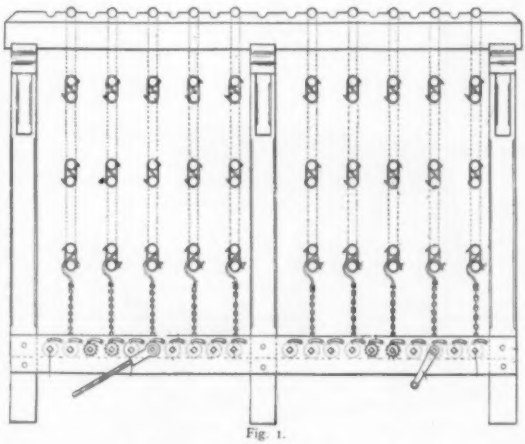


Fig. 1.

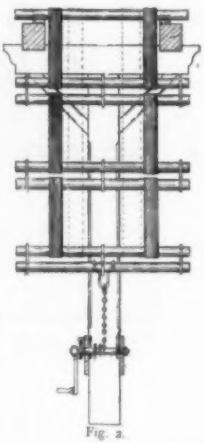


Fig. 2.

The new process consists in taking the skeins directly from the hydro-extractor after dyeing and while still damp stretching them and simultaneously maintaining them in a stretched condition and subjecting them in a closed chamber to dry air at a temperature of about 120 degrees Fahrenheit and preventing shrinking during the drying.

The heated air of the drying-room gradually dries the moist fibre, and owing to their inability to shrink, on account of the stretching machine, it is claimed they receive an intensified lustre.

When the skeins of fibre are taken from the stretching-machine in the drying-room, they are perfectly dry and are ready to go to the manufacturer. It is said they do not shrink and in the woven fabric maintain the intensified lustre imparted by the process.

A Doffing Device for Cap Frames.

The most promising field for efforts to increase the production of cop spinning frames is the laborious doffing process. An attachment, invented in England, for automatically doing this work has recently been patented in this country and is shown in the illustration, which is an elevation plan.

The action of the apparatus is as follows: Taking it that the bobbins upon the spindles have received their full complement of yarns, and that it is desired to displace them by empty ones, the yarns are first slackened by any suitable means, after which the supports are raised so as to bring same into the position; at this time it is necessary that the lifter-rail should be raised to its highest position.

To accomplish this, the cam is mounted upon the shaft, and during its rotation moves in a lateral direction a bowl which operates the lifter-rail in the usual manner.

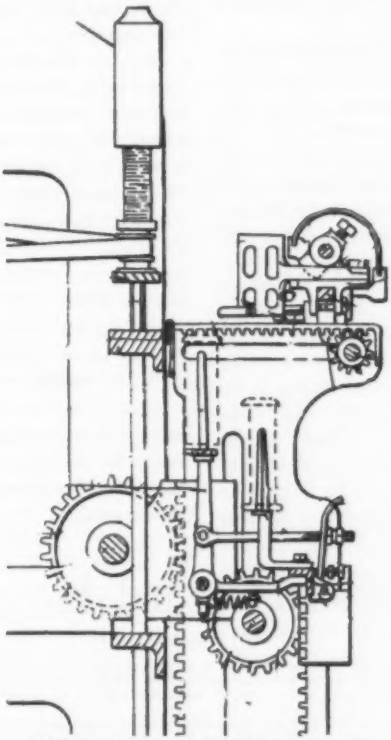
The mechanism carried by the bar is then moved to bring the clips directly over the spindles, a slight tilt

ing or oscillating movement being imparted to these parts in order that the caps in the clips may keep clear of the top front rollers, the thread-guide board being thrown back when the parts are to be moved.

In this manner, on the shaft being advanced toward the spindles, the projecting pieces will come in contact with and be raised by the levers. Any threads which may be toward the front of the caps are guided to the back of same during such advancing movement, by arms hinged on the jaws of the clips, one of such hinged arms being mounted on one jaw of each clip whereon it is held in its closed position by a spring.

The clips and other parts are now lowered by a reversal in the direction of rotation of the shaft to a position wherein, on the jaws of the clips being released by the withdrawal from between them of the levers, the flanges therein take underneath the lower ends of the caps.

The same movement of the rod to release the jaws of the clips also causes the fingers to be moved laterally and so assume a position beneath the bobbins. Hence on the supports being again raised the clips and fingers will raise the caps and bobbins,



DOFFING DEVICE FOR CAP FRAMES.

the latter keeping their positions within the caps.

The rod is now withdrawn to such a position that the full bobbins are vertically above the pegs, at which time the rod is rotated sufficiently to cause the fingers to be withdrawn from supporting the bobbins, but not sufficient to cause the flanges to be withdrawn from supporting the caps.

The parts are then moved over the pegs, on which have been placed a supply of empty bobbins, and these

latter are raised therein through the bar being operated by its racks and wheels, and at this time the rod is again operated so as to cause the fingers to be moved beneath the flanges on the bobbins.

After this the pegs are lowered and the other parts returned to a position above the spindles, over which they are lowered until the caps and bobbins occupy their proper positions thereon.

During this lowering movement the threads are guided or moved close up to the spindles by means of the bar, having notches, in which rest the threads or yarns.

The stud on said bar engages with the slot in the bracket. Hence on the lowering of the bar along with the other parts it is also moved laterally, and thus causes the threads to assume their desired positions beneath the flanges of the empty bobbins.

The clips are then drawn away from the spindles, and at this time the threads which are toward the backs of the bobbins are guided to the proper side of same by the opening of the hinged arms, and at the same time the bobbins are rotated thereby until the pegs on the spindles take within the notches at the lower ends of the bobbins formed for their reception.

During these latter movements the threads from the full bobbins extend to the newly-applied empty bobbins, to which they are now secured, and these are severed simultaneously by means of cutters, which are mounted on a bar and which take over the notched bar.

On the further lowering of the framework, the lever, pivoted thereon, comes into contact with a hinged stop-piece, mounted on the stationary guide, thus causing the withdrawal of the lever from the notch in the bar to allow the spring connected to the lever-arm to move the bar laterally to cause the cutters to be moved over the notches, and thus sever the threads lying therein, or the rod may be moved in a lateral direction manually by means of a handle.

After this severing of the threads has been effected the bobbins are then ready to be started and the spinning, twisting, or doubling operations recommenced.

New Machinery and Processes.

This department is designed to present from month to month a brief mention of new machinery, devices, and processes b ing brought out in this country and abroad, that are of interest to textile manufacturers. It is not a list of patents, but of improvements coming on the market.

Interested parties are referred to the manufacturers for further information. These items are published without charge and regardless of advertising consideration, the idea being to present to our readers a systematic monthly record of new machinery, etc. of interest to textile mill men.

We invite machine builders and others to send us such information for this department.

Lug Strap. W. H. Kelly & Co., 1850 Perkiomen Ave., Reading, Pa., are placing on the market a lug strap which they have named the "Black Diamond." It is an invention of Mr. Kelly, an overseer of weaving of long experience. It consists of two laminated steel blades bolted to a block fastened to an upright rod behind the picker stick. A leather cushion on one side of this block presses against the stick. To vary the power the block is moved along the rod. With this device it is unnecessary to bore the stick consequently its full strength is retained. An illustration will be shown in our next issue.

Narrow Wear Warping Machine. William Hurst & Co., of England, are placing on the market a machine for winding warps of ends for narrow fabrics. A large warp is first made, dyed and bleached, and then split into

sections, each of which is wound on separate spools or reels.

Weighing Machine for Bales. W. and T. Avery, Soho Foundry, Birmingham, England, have recently brought out an improved weighing machine for bales of cotton, wool, etc. The weight of the material is indicated by a slide on a graduated rod. The novel feature, however, of this scale is an arrangement by which a ticket inserted in a slot at the top of the scale leaves a printed record of the weight expressed in cwt., lbs., oz., etc. The weight of each bale can be printed either on a separate ticket or on a continuous tape; this will prove very convenient where large quantities of baled material are to be weighed.

Fulling Mill. An English firm has placed on the market a fulling mill with a device for preventing creases and mill wrinkles in the goods. On each side of the cloth before it passes between the rolls is a wooden block. The corrugateed surfaces of these blocks are alternately pressed against the goods and released. This device, it is claimed, guides the pieces between the rolls in such a way that the folds are continuously changed, thus preventing the formation of wrinkles and streaks.

Wool Dryer. Edward Robinson, 133 Casteinau Barnes, London, S. W., has invented and is placing on the market a raw stock dryer, in which a series of aprons inclined at an angle of 45 degrees carries the material from one end of the dryer to the other. It is in the arrangement of the aprons that this machine varies from the ordinary style of wool dryer. They are so arranged that the stock is held between two aprons during its passage up and down the bands of the machine. This prevents any stock falling over the aprons.

Dryer for Warp Yarn. Gebr. Sucker, Gruenberg, Silesia, Germany, are placing on the market a cylinder dryer for warp yarn. The cylinders are perforated, and inside the large one is placed a fan, which forces hot or cold air through the yarn. The machine is provided with a device for regulating the temperature. In this way, damage to the material by too high a temperature can be prevented.

Roller Grinder. F. J. Mistral Freres, St. Remy de Provence, France, are introducing an automatic machine for grinding the rolls of wire nappers. It is stated that this is the first time that this work has been done by machinery, and the published account states that it is giving very good results.

Dobby Loom. Lupton & Place, Queen Street Works, Burnley, England, are placing on the market an improved dobby motion, containing many less parts than in the ordinary type. Instead of using two jack levers and a toothed segment, the connection is made by a device which dispenses with the segment.

Self-Shuttling Loom. Harling & Todd, Rosegrove Works, Burnley, England, have recently placed on the market a self-shuttling loom, by which the shuttle is automatically changed when the filling is exhausted. It is far too complicated for even a brief description here, but is worthy of note as a new attempt of English machine builders to solve the problem of automatic looms.

Piece Scouring Machine. Richard Kilburn & Sons, Elland Road, Leeds, England, have recently placed on the market a new form of piece scouring machine. From the description given we judge it resembles in construction a fulling mill more than the ordinary type of scouring machine. The lower roll is two feet in diameter and seven inches wide, fitted with brass flanges, between which the top roll rests.

DYEING DEPARTMENT

Dye Recipes for November.

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16 page pamphlet, in convenient form for preservation. Subscription price for the TEXTILE WORLD with the Dyers' Supplement is $4.

Recipe No. 161.

Scarlet on Worsted Yarn.

Tyemond Scarlet S on 100 lbs. worsted yarn.

Prepare the dye bath with

3 lbs. Tyemond Scarlet S.

(Read, Holliday & Sons, Ltd., 7 Platt St., New York.)

10 lbs. Glauber's Salt.

3 to 5 lbs. Acetic Acid. (To exhaust.)

Enter yarn at 104° F. and the bath brought to a boil in about 1/2 hour, and the dyeing continued at a boil for one-half hour longer, exhausting the dye bath as completely as possible.

In dyeing goods not easily penetrated, it is well to add 5 lbs. of acetate of ammonia to the bath at the start, exhausting toward the end with acetic acid.

Tyemond Scarlet S possesses good fastness to milling and stoving, and ordinary exposure.

Recipe No. 162.

Black on Worsted Yarn.

Domingo Chrome Black F F on 100 lbs. worsted yarn.

Prepare the dye bath with

6 lbs. Domingo Black F F.

(C. Bischoff & Co., 88 Park Place, New York.)

10 lbs. Glauber's Salt.

10 lbs. Acetic Acid.

Enter at 130° F., bring to a boil and dye at this temperature for about one hour, exhausting the bath by adding

1 lb. Sulphuric Acid.

After treat one-half hour at the boil by adding

2 lbs. Potassium Dichromate

to the dye bath.

Domingo Chrome Black F F withstands fulling and washing excellently and may be classed with the alizarines for fastness.

Recipe No. 163.

Violet on Worsted Yarn.

Guinea Violet 4 B on 100 lbs. worsted yarn.

Prepare the dye bath with

1½ Guinea Violet 4 B.

Berlin Aniline Works, 213 215 Water St., New York.

10 per cent. Glauber's Salt.

5 per cent. Acetic Acid.

Enter yarn at 170° F., bring to a boil and dye at a boiling temperature for one hour.

Guinea Violet 4 B has a very high coloring power, goes on the fibre evenly, and possesses good fastness.

Recipe No. 164.

Black on Worsted Yarn.

Sulpho Cyanine Black B B on 100 lbs. worsted yarn.

Prepare the dye bath with

6 lbs. Sulpho Cyanine Black B B.

20 lbs. Glauber's Salt.

(Farbenfabriken of Elberfeld Co., 40 Stone St., New York.)

5 lbs. Acetate of Ammonia.

Enter yarn at 100° F., bring slowly to a boil and then exhaust slowly with addition of acetic acid.

Sulpho Cyanine Black B B produces a bright bluish shade of black, which possesses excellent fastness to light.

The fastness to washing and milling and also to alkalies, acids and carbonization is very good.

Recipe No. 165.

Black on Worsted Yarn.

Acid Chrome Black B on 100 lbs. worsted yarn.

Prepare the dye bath with

7 lbs. Acid Chrome Black B.

(Sykes & Street, 85 Water St., New York.)

4 lbs. Acetic Acid.

10 lbs. Glauber's Salt.

Enter at 170° F., bring to a boil and dye at this temperature ½ hour, then add

1 lb. Sulphuric Acid,

and continue the boiling ½ hour longer.

After chrome by adding

1½ lbs. Potassium Bichromate,

and boiling ½ hour longer.

Acid Chrome Black B gives a color very fast to light and milling. It goes on the fibre slowly, thus preventing unevenness.

Recipe No. 166.

Green on Worsted Yarn.

Kitone Green N N on 100 lbs. worsted yarn.

Prepare the dye bath with

3 lbs. Kitone Green N N.

(A. Klipstein & Co., 122 Pearl St., New York.)

15 lbs. Sodium Sulphate.

4 lbs. Sulphuric Acid.

Enter at 160° F., bring to a boil, dye at this temperature for about one hour.

Kitone Green N N is especially adapted for dyeing even and fast shades on wool.

Recipe No. 167.

Brown on Cotton Yarn.

Tetranil Brown R on 100 lbs. cotton yarn.

Prepare the dye bath with

5 lbs. Tetranil Brown R.

(New York and Boston Dyewood Co., 156 William St., New York.)

1 lb. Soda Ash.

25 lbs. Common Salt.

Enter at 170° F., bring to a boil and dye at this temperautre for one hour.

Tetranil Brown R is well adapted for hosiery dyeing on account of the desirable shade produced. The color produced is readily dischargeable, and can be made quite fast to light and washing by a short after treatment.

Recipe No. 168.

Blue on Cotton Yarn.

Naphtogene Blue 2 R on 100 lbs. cotton yarn.

Prepare the dye bath with

5 lbs. Naphtogene Blue 2 R.

Berlin Aniline Works, 213-215 Water St., New York.

1 lb. Soda Ash.

25 lbs. Common Salt.

Enter at 180° F., bring to a boil and dye at a boil for one hour.

Diazotize by working for 20 to 30 minutes in a cold bath made up with

3½ lb. Sodium Nitrite.

13 lbs. Muriatic Acid.

Then wring or squeeze, rinse slightly and enter immediately into a cold developing bath.

1 lb. Beta Naphthol.

1 lb. Caustic Soda (76° Tw.)

and work 20 to 30 minutes cold. Rinse, soap if necessary and dry.

Naphtogene Blue 2 R is extremely fast to light and washing and good to acids and alkalies. It does not bleed into white, and serves as a substitute for indigo on cotton.

Recipe No. 169.

Red on Cotton Yarn.

Benzo Fast Red G L on 100 lbs. cotton yarn.

Prepare the dye bath with

4 lbs. Benzo Fast Red G L.

(Farbenfabriken of Elberfeld Co., 40 Stone St., New York.)

40 lbs. Common Salt.

2 lbs. Soda Ash.

Enter at 170° F., bring to a boil and dye at this temperature for one hour.

Benzo Fast Red G L possesses good fastness to light for a direct cotton

color. Like most direct reds it is somewhat sensitive to acids, but is much less so than the majority.

It dyes very level, and is excellent for dyeing curtains, upholstery cloth, draperies and mercerized goods.

Recipe No. 170.

Black on Worsted Yarn.

Acid Chrome Black 2 B on 100 lbs. worsted yarn.

Prepare the dye bath with

7 lbs. Acid Chrome Black 2 B.

(Sykes & Street, 85 Water St., New York.)

4 lbs. Acetic Acid.

10 lbs. Glauber's Salt.

Enter at 170° F., bring to a boil and dye at a boil ½ hour. Then add

1 lb. Sulphuric Acid,

and continue the boiling ½ hour longer.

After chrome by adding

1½ lbs. Potassium Bichromate,

and boiling ½ hour longer.

Acid Chrome Black 2 B gives a color very fast to light and milling. Goes on the fibre slowly thus preventing unevenness.

Recipe No. 171.

Scarlet on Worsted Yarn.

Tyemond Scarlet Y on 100 lbs. worsted yarn.

Prepare the dye bath with

3 lbs. Tyemond Scarlet Y.

(Read, Holliday & Sons, Ltd., 7 Platt St., New York.)

10 lbs. Glauber's Salt.

3 lbs. Sulphuric Acid.

Enter at 104° F., bring to a boil in one-half hour and dye at this temperature for one hour, exhausting the dye bath by adding

2 lbs. Sulphuric Acid.

Tyemond Scarlet Y possesses good fastness to scouring and milling, and will not bleed into white.

Recipe No. 172.

Blue on Cotton Yarn.

Tetrazo Blue 4 R on 100 lbs. cotton yarn.

Prepare the dye bath with

3 lbs. Tetrazo Blue 4 R.

(New York and Boston Dyewood Co., 156 William St, New York.)

25 lbs. Common Salt.

Enter at 180° F. and dye at a boil for one hour.

Tetrazo Blue 4 R gives an excellent shade of blue which possesses all the characteristics of the direct cotton colors.

Recipe No. 173.

Blue on Worsted Yarn.

Sulphon Acid Blue G on 100 lbs. worsted yarn.

Prepare the dye bath with

4 lbs. Sulphon Acid Blue G.

(Farbenfabriken of Elberfeld Co., 40 Stone St., New York.)

20 lbs. Glauber's Salt.

5 lbs. Acetate of Ammonia.

Enter at 105° F., bring slowly to a boil and exhaust gradually by the addition of acetic acid.

Sulphon Acid Blue G possesses excellent fastness to light and good fastness to steaming, alkalies and acids.

Recipe No. 174.

Brown on Worsted Yarn.

Domingo Chrome Brown G on 100 lbs. worsted yarn.

Prepare the dye bath with

3 lbs. Domingo Chrome Brown G.

(C. Bischoff & Co., 88 Park Place New York.)

10 lbs. Glauber's Salt.

10 lbs. Acetic Acid.

Enter at 130° F., bring to a boil and dye at this temperature for about one hour, exhausting the bath by adding

1 lb. of Sulphuric Acid.

After treat one-half hour at the boil by adding.

2 lbs. Potassium Dichromate

to the dye bath.

Domingo Chrome Brown G withstands fulling and washing excellently and may be classed with the alizarines for fastness.

Recipe No. 175.

Yellow on Worsted Yarn.

Tartrazine on 100 lbs. worsted yarn.

Prepare the dye bath with

2 lbs. Tartrazine.

(A. Klipstein & Co., 122 Pearl St., New York.)

15 lbs. Glauber's Salt.

4 lbs. Oil of Vitriol.

Enter at 170° F., bring to a boil and dye at a boil for one hour.

Tartrazine dyes excellent shades of yellow which are fast to fulling and scouring.

Recipe No. 176.

Black on Worsted Yarn.

Azo Marino Black 6 B on 100 lbs. worsted yarn.

Prepare the dye bath with

6 lbs. Azo Marino Black 6 B.

(Cassella Color Co., 182 Front St., New York.)

20 lbs. Glauber's Salt.

15 lbs. Sodium Bisulphite.

Enter at 160° F. and dye at a boil for one to one and one-half hours, and wash thoroughly.

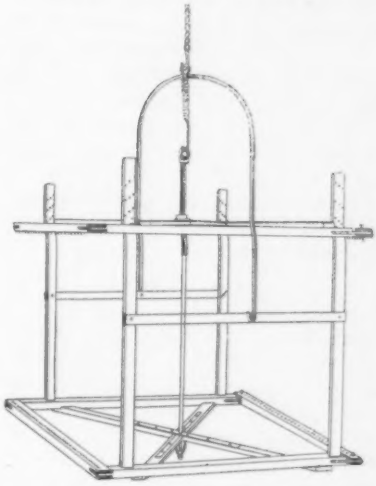
Azo Marino Black 6 B gives a deep and pleasing shade of black with a bluish tone.

A Frame for Indigo Piece Dyeing.

The low cost of both artificial and natural indigo is likely to result in a considerable increase in the use of both products, and for that reason the improved frame for indigo piece dyeing shown in the accompanying illustration, and which has recently been patented in Germany, will be of interest.

The apparatus is designed for cotton and linen piece goods. The pieces are first carefully stretched on the frame, and then they are tightened by turning the screw, which moves the frame up or down. The frame loaded with the pieces is then immersed in the dye vat until the required shade is obtained.

As the cloth is dry when entering the dye bath, the action of the liquor causes the pieces to become slack on the frame. Ordinarily, this results in the folds rubbing together and an uneven shade on the pieces, but with this new frame the difficulty can be



easily remedied by a few turns of the screw to take up the slack after the goods have been immersed in the liquor.—Deutsche Faerber Zeitung.

Dyeing Aniline Black.

K. OEHLER, OFFENBACH O. M.

Aniline Black is produced by the suitable oxidation of aniline and homologous bases. It is faster to washing and light than any other black. Its fastness to the action of chlorine may be considered good. Aniline black when dyed in the right way should not turn green under the influence of acids.

Considering the superior properties of aniline black named above it will explain the high position it occupies among the blacks, in spite of the various new colors which have appeared lately. Fabrics dyed with aniline

*This article is by the leading manufacturer of aniline salt in Europe, his annual production being about 4,000 tons. The American agents are Geisenheimer & Co., 189 Front St., New York.

black gain in weight from 8 to 10 per cent. and the feel is considerably improved.

A certain amount of skill and accurate working are indispensable for the production of a good aniline black. Where these conditions prevail, aniline black, once introduced, will not be discarded in the future.

Aniline oil and aniline salt (aniline hydrochloride) are used in the dyeing of aniline black.

There are three methods of dyeing: I. Dyed black; II. Aged black; III. Steamed black.

I. DYED BLACK.

Dyed black is easily produced in a single bath and is mostly used for the dyeing of cotton yarn. The method is a simple one, but the color obtained has the fault of rubbing off badly. The color is formed in the dyebath itself and is therefore chiefly mechanically deposited on the cotton fibre. This fault may, however, be overcome to a large extent, by sizing the yarn after the dyeing. This is absolutely necessary in cases where the yarn is to be woven into colored goods.

The shade of dyed black turns somewhat greener, it however weakens the fibre very little.

The following is a practical method for dyeing:

For 100 lbs. (100 Ko.) of cotton.

Dyebath 1.20 viz. 200 gal. (2,000 l.) of dye liquor for 100 lbs. of cotton: 13 lb. aniline salt K. Oehler, 20 lbs. hydrochloric acid 34.2 degrees Tw., 14 lbs. bichrome, previously dissolved in hot water.

The yarn is turned cold for one hour, after this the temperature is raised to 158 to 176 deg. F., at which temperature the yarn is turned for half an hour.

Rinse well and soap half an hour at a temperature of 140 deg. F. (1 lb. of soft soap per 10 gals. of water). The yarn may be softened with 2 per cent. of Turkey red oil, hydro-extracted and dried.

Direct cotton colors are sometimes used as a bottom. For this purpose dyeing with 1.5 per cent. Toluylene-Dark Blue R, with the addition of 10 per cent. of Glauber's salt is recommended. The yarn should be rinsed after dyeing.

II. AGED BLACK.

The cloth is evenly impregnated with a solution of aniline salt, to which an oxidizing agent (chlorate), an oxygen carrier (bluestone, vanadate, etc.) and a hygroscopic salt (ammonium chloride) have been added. After this the cloth is dried as rapidly as possible at a low temperature and then aged at a temperature not exceeding 92 to 96 deg. F. The "black mordant," as we shall call the aniline solution, should therefore be allowed to dry first and only after the drying the cloth should be aged in a warm, moist atmosphere. The room used for this purpose is called the ageing room.

Both phases of the aniline black process, the drying and the ageing proper, are therefore accomplished in the same room.

The concentration of solution should be from 10.2 to 12.0 deg. Tw.

To produce a normal shade of aniline black the cloth should be so impregnated, as to retain exactly its own weight in liquor.

The cloth remains in the ager until it is of a greenish black color. This occupies generally from 6 to 8 hours. In treating the cloth afterwards with oxidizing agents and subsequent soaping, a deep black is developed, which is practically ungreenable.

Experience and strict adherence to a certain method of working are imperative in the dyeing of an aged black, otherwise the strength of the fibres may suffer.

To avoid tendering it is recommended to add aluminum acetate to the aniline solution. This neutralizes the acid liberated in the process, principally hydrochloric acid.

Aged black is dyed mostly on cotton yarn, cotton hosiery (stockings), cotton piece goods and also on loose cotton.

It is also very extensively dyed on

silk unions (silk and cotton).

The mechanical treatment is not without importance and has to be chosen according to the kind of material. Loose cotton is treated on fixed or movable hurdles. Yarn is placed on sticks or on rotating winches. Stockings are stretched over forms or treated in special cylinders made of wire gauze. Pieces are either hung up in the ageing room or passed through a rapid ager of the Preibisch-system.

Yarn. Yarn dying being of foremost importance, will be dealt with very exhaustively.

Boiling. The cotton yarn is boiled with 3 to 5 per cent. of soda and is afterwards well rinsed in water. It is then wrung or hydroextracted, so as to free it as much as possible from water, and stretched. Thirty to 50 lbs. of yarn are then in one operation impregnated with the black mordant. Not more than 50 lbs. of yarn should, however, be taken at the time.

The black mordant is prepared in the following way: 120 lbs. aniline salt K. Oehler dissolved in 26 gals., 3 pints, 1 gill of water; 5 lbs. 8 ozs. bluestone dissolved in 10 gals. of water; 37 lbs. 9 1/2 ozs. sodium chlorate dissolved in 7 gals. 3 pints 1 gill of water; 4 lbs. ammonium chloride dissolved in 2 gals. 3 pints 1 gill of water. To this are added 4 gals. 6 pints 1 1/2 gills aluminium acetate 15 deg. Tw.

A wooden vat of about 120 gals. capacity in which 50 lbs. of cotton yarn can be turned comfortably is suitable for the purpose. The solutions prepared as above are now mixed in the vat, the whole amounting to about 100 gals. at 12 deg. Tw.

The height of the liquor should be marked inside the vat. The yarn is entered, turned for half an hour, then layed up, wrung lightly and hydroextracted. The hydroextractor is preferably placed at a somewhat higher level, thus enabling the extracted liquor to flow readily back into the vat. Care should be taken that the yarn is not too much extracted, as it ought to retain about its own weight in liquor.

It is now well stretched, so as to insure perfectly even impregnation. After this the yarn is placed on sticks (usually beachwood). To prevent absorption by the wood of any liquor out of the yarn the sticks are wiped over with black mordant and dried. If this is not done, the dyed yarn will be lighter in places where it has been in contact with the wood.

Ageing Room. This plays a very important part. Every well ventilated drying room may, however, be used. It should have a ventilator in the ceiling or in the gable, which draws in fresh air from underneath the floor of the chamber. The openings unite in one large channel which contains steam radiators. The air drawn in by the ventilator is heated in passing over the radiators. The air in passing through the yarn is saturated with moisture and with the acid vapors which are formed later in the process and which are so dangerous to the cotton fibre. The saturated air is then expelled by the ventilator.

The ageing chamber should be large enough to hold at least one day's production. On no account must it be too small. Two hundred and eighty to 350 cubic feet are considered sufficient for 100 lbs. of yarn. The chamber should be ample in height (about 15 feet) so as to ensure comfortable working. It is advisable to have a free space of from 5 to 6 1/2 feet below the ceiling in which the vapors, rising from the yarn, will accumulate and from whence they are gradually drawn away by the ventilator. To ensure even dyeings no draft must be created in the ageing chamber. To this purpose it is advisable to place a false bottom above the ordinary floor.

Uniformity of temperature in every part of the ager is essential. For this reason, the ager should be lined with wood If the situation is a sheltered one, the walls should at least be painted with linseed oil so as to pre-

vent the action of the acid vapors on the mortar. This coating will also prevent particles of lime from falling on the yarn, which would cause gray or white specks.

Laths are fixed in the ager to carry the sticks with the yarn conveniently. For the purpose of watching the process of ageing a small window about 18 inches square should be provided in a suitable place.

Wet and dry bulb thermometers are fixed near this window. The arrangement consists of two thermometers, which are exactly equal, fixed on a small board. The bulb of the wet bulb thermometer is enveloped in a piece of calico which dips in water, contained in a small vessel. In evaporating, the water absorbs heat and the temperature consequently falls. The drier the air in the room, the more rapid is the evaporation and therefore the greater is the difference between temperature and moisture, or between the wet and the dry bulb thermometer respectively.

The impregnated yarn is evenly, but not too closely, distributed in the ager, the ventilator is set in motion and the temperature raised to 94.5 deg. F.

The yarn, when brought into the ager, is of a grayish white color.

As the drying progresses it changes into light green and finally into dark green.

(To be Continued.)

Prof. J. J. Hummel.

The death of this well known man will cause deep regret on the part of the large number in this and other countries to whom he is known as the author of valuable works on chemistry and dyeing. To readers in this country he is best known by "The Dyeing of Textile Fabrics," a work that has been of untold value to dyers of textiles. The following sketch of Prof. Hummel's career is taken from The Journal of the Society of Dyers and Colorists:

"Professor Hummel has had charge of the Dyeing Department of the Yorkshire College ever since its institution in 1879, and the methods of teaching which he adopted have been largely followed by teachers of dyeing on the Continent and in America, as well as in this country. He has, indeed, throughout been a pioneer in matters pertaining to the scientific study and teaching of dyeing; and the present buildings and equipment of his department, which are largely of his own design, will afford a permanent monument of his genius for organization and untiring energy.

"His father, who was a native of Aarau, Switzerland, was engaged in calico printing at Clitheroe, in Lancashire, but died at an early age. His stepfather, John Sieber, was connected with the same concern, and was intimately associated with John Mercer, Frederick Steiner, Walter Crum, Daniel and Camille Kœchlin, and others whose names are well known in connection with color chemistry.

"In such an environment it is not surprising that Hummel, even in his boyhood, displayed a marked taste for chemistry, particularly as applied to the application of coloring matters, a field in which he afterwards achieved his great reputation. Proceeding to Zurich, he obtained the Diploma at the Polytechnikum; and on returning to England, in 1870, he worked for a time in the Laboratory of Dr. Crace-Calvert in the Royal Institution, Manchester.

"He next succeeded Horace Kœchlin as chemist in the calico print works of Messrs. Jas. Black & Co., Alexandria, near Glasgow, where he remained for six years, introducing many improvements, particularly in connection with the application of artificial alizarin, then a new product. He also worked out, and was the first to introduce into this country, the method of fixing basic colors on cotton by means of tannic acid and tartar emetic.

"During the next three years Mr. Hummel held various positions in calico print works in Lancashire and Scotland, and, as already stated, he was appointed the first head of the Dyeing Department of the Yorkshire College in 1879, a position which he still held at the time of his death.

"The systematic study of dyeing and printing in a college of University rank was then a new thing in England; and for some time Professor Hummel's energies were largely devoted to devising and elaborating methods of instruction, and designing suitable apparatus and other equipment. The experience thus gained culminated in 1885 in the erection of an extensive new block of buildings, which was further enlarged in 1899.

"His success as a teacher was from the first very conspicuous, and his students are now to be found holding important positions in many of the larger dyeworks and printworks throughout the country. The reputation of his department was also such as to attract students in considerable numbers from the Continent, America, Japan, and many other countries; and in England he has long been looked upon as the doyen of his profession.

"Feeling the need of a suitable textbook, he published in 1885 a manual under the title of 'The Dyeing of Textile Fabrics.' This achieved an immediate success, and may now legitimately be considered to have taken position as a classic in the literature of dyeing, being the first of the modern text-books on the subject. Nearly all later works on dyeing have been modeled to some extent on Hummel's work, which was first translated into German by Dr. E. Knecht, and subsequently into French, Italian, and Japanese.

"Among his other important literary contributions may be mentioned the article on 'Dyeing' in the recently-issued supplement to the Encyclopædia Britannica articles on 'Bleaching,' 'Dyeing,' and on many natural dyestuffs in Thorpe's Dictionary of Applied Chemistry, and the article on 'Bleaching' in Spon's Encyclopædia of the Industrial Arts. He also acted as collaborator in the preparation of Eger's English-German Technological Dictionary.

"His lecture before the Society on 'The Application of Alizarin Colors in Wool Dyeing' was specially important since it was the means of drawing the particular attention of wool dyers to these valuable colors, which had until then been almost confined to the dyeing and printing of cotton goods.

"He was also the first to point out the true explanation of the changes which occur in the 'ageing' of logwood; and among his most important works in recent years must be classed his systematic investigation of the action of light on the whole range of coloring matters applied to various fabrics, the results of which have been published in the form of reports to the British Association, under the auspices of which society this laborious piece of work was carried out.

"Professor Hummel was an original member of our society, and served on the Publication Committee from the commencement. He was elected a Vice President in 1888, and continued to hold both offices until his demise.

"To the industries concerned with the production and practical application of coloring matters, Professor Hummel has rendered invaluable service, and by his premature death the science of tinctorial chemistry loses one of its most brilliant exponents. To the members of this society his loss bears a more personal aspect, and the gap left in the ranks of his profession will be very difficult to fill and will be long felt by those whose interests he labored so long and so successfully to advance."

—We are not required to believe either our rulers or their enemies.—A. Dumas.

MILL NEWS.

Cotton.

New Mills.

*Alabama, Huntsville. J. M. Torrence, formerly superintendent of the Lowe Mfg. Co., states that no location has yet beet settled for the new mill which he may organize and build.

*Alabama, Piedmont. The Coosa Mfg. Co. expects to have the new mill, now under construction, ready to start operations January 1st.

*Arkansas, Little Rock. A. B. Poe, who has charge of the subscriptions to the stock of the proposed new cotton mill at this place, reports that subscriptions are being made liberally and the present outlook is favorable.

*Georgia, Cedartown. Work has been started on foundation for the large addition to be built by the Standard Cotton Mills. The main building will be 170x110 feet, one story and basement; power to be supplied from the present mill, transmitted by a cable of 150 h.p. capacity. The new plant will have weekly output of 20,000 pounds of yarns, coarser grades, from 4s to 10. It is expected the building will be completed and machinery installed by January.

*Georgia, Ringgold. The new cotton mill to be established at this place will be known as the Catoosa Manufacturing Company. W. H. Odell has been elected president and secretary of the concern and J. A. McClain, vice-president and treasurer. A large part of the necessary stock has already been subscribed and they expect to soon have the full amount of $100,000.

*Maine, Westbrook. The Westbrook Hammock Company has been incorporated for purpose of manufacturing hammocks and other goods. Nathan A. Brown is president of the company; and James W. Morris, treasurer. Richard Goodall is mentioned as one of the directors.

*Massachusetts, Mansfield. G. W. Gallison is treasurer of the Mansfield Braiding Company which has been recently incorporated for manufacturing braided goods. They expect to start operations in January.

*Mexico, Orizaba. The Compania Industriale are building a new mill at Tenango, in the state of Vera Cruz, which is partially completed and for which some equipment may still be wanted.

Pennsylvania, Philadelphia. The E. H. Godshalk Company's upholstery plant has been purchased by the Meehan-Mothes Company, comprising Alfred H. Mothes and Richard H. Meehan, who have been connected with the Godshalk Company for a number of years as superintendent and salesman respectively in the upholstery department. The Godshalk Company will continue the manufacture of knit goods.

*Pennsylvania, Philadelphia. David H. Stroud has started removing machinery from his old mill to the new one recently completed and expects to be ready to start operations in the new plant by November 1st. The capacity will be greatly increased by additional machinery.

*South Carolina, Anderson. Work will start at once on construction of the new buildings for the Toxaway Mills, recently incorporated with capital stock of $225,000. D. P. McBrayer is president and treasurer of the company, which expects to have the plant ready for operations by next summer. The mill will be so planned that it can be enlarged to 25,000 spindles at any time in the future. Gray goods will be made.

South Carolina, Anderson. R. S. Hill, president of the Farmers' & &Merchant's Bank, is at the head of a movement to start another cotton mill at this place. A 25,000 spindle mill is talked of, with a capital of $600,000. Mr. Hill reports that in the few days he has been at work upon the matter he has met with more success than was anticipated, and if favorable progress continues to be made, it is expected that the organization will be perfected before the end of the year. A high grade of goods will be manufactured.

South Carolina, Laurens. W. E. Lucas, of the Laurens Cotton Mill Co., is interested in a project under way for establishing a $200,000 cotton mill here for making fine goods. $75,000 has been subscribed by local business men. Negotiations are reported under way for purchasing a site.

*South Carolina, Laurens. The Ware Shoals Mfg. Co.'s new mill will be equipped with 25,000 ring spindles and 800 looms. Work has been started on plant, which they expect to have ready for operation October, 1903. Company is capitalized at $500,000, with N. B. Dial, president and treasurer.

*South Carolina, Spartanburg. Work is well under way on construction of the Drayton Cotton Mill, of which A. B. Calvert is president. The first story of the main building will soon be completed and the walls of the entire structure be up within six weeks, if weather continues favorable.

*South Carolina, Spartanburg. Work is nearly completed on the addition for the Saxon Mills, to accommodate 12,500 spindles and 300 looms, the machinery being placed in position. The new addition is 110x130 feet, four stories high.

*Tennesse, Knoxville. Work is being pushed on construction of the new buildings for the Brookside Mills, so that machinery can be installed and operations started by January 1st. The weave room will be 150 by 300 feet, one story; carding mill, 150 by 250 feet, two stories; engine room, 50 by 75 feet, equipped with 1,000 H. P. engine; and boiler house, 50 by 50 feet, with boilers of 1,500 H. P. capa-

city. A brick chimney, 150 feet high, will also be built.

*Texas, Brenham. Work on buildings for the Brenham Cotton Mills is progressing, and foundations are in and the walls are half up.

*Virginia, Danville. The Dan River Power & Mfg. Co. advise us that they now expect to build a mill with an equipment of 40,000 spindles and about 1,600 looms, which, if successful, will be followed by another mill of the same size, each plant to cost about $1,000,000. Lockwood, Greene & Co. of Boston are the architects in charge. Same parties are interested in Riverside Cotton Mills at Danville, Va. R. A. Schoolfield, treasurer. New York office, 58 North St.

*Virginia, Fries. The buildings for the Washington Mills are nearly completed. The main building is four stories high and the company contemplates equipping same with 40,000 spindles and 100 looms. The plant is expected to be in operation early next year.

*Virginia, Norfolk. Margolius & Co.'s new mill is progressing satisfactorily, and it is expected to begin production in January.

Enlargements and Improvements.

Canada, Cornwall. The Canada Mills of the Canadian Colored Cotton Mills Co., have installed 44 cards, new drawing and two spinning frames.

*Connecticut, Bridgeport. The Bridgeport Elastic Fabric Company expects to move the plant about November to a larger building, where the machinery will probably be increased.

Georgia, Atlanta. The Gate City Cotton Mills have completed the erection of an addition in which they will install 5,000 spindles, giving them a total of 10,000 when completed. A new dye house has also been built and will be put in operation by November 1st.

Georgia, Atlanta. The Fulton Bag & Cotton Mills have made application for privilege of increasing the capital stock from $250,000 to $500,000, in amounts as proposed by the company.

Georgia, Griffin. Unless some change in plans is made, it is probable that the Griffin Mfg. Co will add about 10,000 spindles and 400 looms during the coming year.

Georgia, Lafayette. A meeting is soon to be held by the directors of the Union Cotton Mills, to consider plans for enlarging the plant. One of the suggestions set forth is to double the capital stock and double the present capacity of the mill, now operating 7,680 spindles and 212 looms, on sheetings, towellings and drills.

*Mississippi, Stonewall. The Stonewall Cotton Mills, recently damaged by fire, will be rebuilt larger and better than before the fire. All the plans have been made and contracts will soon be let for construction of the buildings, machinery and other equipment.

New Hampshire, Hooksett. The Dundee Mills are installing cards and carding machinery in the No. 1 mill and expect to begin operations in same about the first of January.

New Hampshire, Manchester. The Amory Manufacturing Company is installing 288 Draper looms in the old Langdon Mill.

*New Hampshire, Manchester. The new weave shed of the Amoskeag Mfg. Co., containing about 2,000 looms, is completed, and will be gradually started up during the next few months. The change from coarser to finer goods which has been taking place in this mill for the past two years has resulted in a portion of the preparatory and carding machinery being not fully employed, and the new weave shed has been built to give more production, and about 30,000 new spindles added to supply the yarn for the looms.

New Hampshire, Meredith. The Atlas Linen Co. is increasing its capacity and adding new machinery.

North Carolina, Bynum. At a meeting held recently by the stockholders of the J. M. Odell Manufacturing Co., it was decided to increase the capital stock to $110,000 for purpose of building a new dam (10 feet high) and adding 150 Draper looms to the plant, hitherto operated only on yarns. Plant is equipped with 6,000 spindles. Capt. W. L. London was elected to succeed the late C. P. Emery, as secretary and general manager.

North Carolina, Monroe. Additional floor space has been made to the Monroe Cotton Mills, which will add ten new twisters and 3,000 spindles to the equipment of the mill.

*Pennsylvania, Chester. The old Phoenix mills have been purchased by Galey & Lord, who will equip same for manufacturing cotton cloth.

Rhode Island, Providence. An addition is to be built for the Atlantic Mills, at cost of about $30,000, for skein dyeing and scouring purposes.

South Carolina, Bennettsville. The Bennettsville Manufacturing Company, now operating 15,000 spindles on coarser grades of yarns, will make extensive improvements to the plant, whereby fine yarns from long staple and Egyptian cottons will be made. About $125,000 will be expended. Charles Iceman has been appointed superintendent of the mill.

*South Carolina, Greenwood. The Greenwood Cotton Mill advises us that they have not yet completed full arrangements for mill No. 2 and cannot say when work will start on construction, although they hope to do so by January or February.

*South Carolina, Belton. The machinery is being placed in position in the new building recently built by the Belton Cotton Mills. This will consist of 25,000 spindles and 600 looms. Mill No. 1 contains 27,000 spindles and 300 looms, making shirtings, sheetings and drills.

*South Carolina, Williamston. Work has been started by the Williamston Cotton Mills on enlarging the plant for installation of 5,000 additional spindles, which will be put in as soon as possible.

Mills Starting Up.

*Arkansas, Mammoth Springs. Robert L. Steele at Rockingham, N. C., advises us that it is his intention to equip the buildings of the Mammoth Springs Cotton Mill, bought by him, with new and up-to-date machinery. Size and general plan depends somewhat on the amount of capital interested, and at this date plans are not yet fully matured.

Georgia, Gainesville. The Georgia Mfg. Co.'s mill, which has been closed for the past three months, has started up, with M. T. Brown as superintendent.

*Massachusetts, Fall River. Operations have been started in the new mill and dye house of the Heywood Narrow Fabric Co., which replaces that destroyed by fire.

*Texas, Cuero. The Cuero Cotton Mills have started up, making 4 and 4.50 yd. sheetings. On October 1st they took the first piece of cloth off the loom. They are training green help, and expect by the end of this month to have the whole mill in operation. Edward Soehle is superintendent.

Woolen.

New Mills.

Georgia, Lexington. We have a report that the Maxeys Mfg. Co. will be formed to operate a knitting mill, and that the capital has been raised and work will soon begin.

*Illinois, Chicago. The report that F. K. Stevens Knitting Co. should succeed F. K. Stevens is not exactly correct. Mr. Stevens is building a new mill at Chicago Heights, which he expects to occupy the latter part of November, and in which he will manufacture woolen and marino yarns as at present. The new mill will be equipped with four sets of cards; dyehouse; steam power.

*Massachusetts, Methuen. The Boston Worsted Company, recently incorporated, will remove the plant now located here, to Lawrence. H. A. Marble of New York is president of the concern; L. W. Brown, Methuen, treasurer, and E. S. Creamer, Methuen, designer and general manager. Ladies' dress goods and men's wear are made.

New Hampshire, North Salem. The Granite State Worsted Mills have been incorporated with a capital stock of $30,000, paid in. L. W. Taylor is president; Howard L. Gordon, treasurer and William H. Hanson, secretary and superintendent. They will operate the plant formerly run by the Salem Worsted Mills, of which Mr. Hanson was manager, and manufacture ladies, dress goods and linings. The mill has been started up. It contains 36 wide looms and one set of drawing and two sets of spinning. They are in the market for another set of secondhand drawing. No dyehouse. They will buy worsted yarns from 10's to 40's, and also cotton singles from 10's to 45's.

*Nova Scotia, Amherst. The name of the new woolen mill on which previous reports have been issued, will be the Hewson Woolen Mills, Ltd. Work on the buildings will be begun September 4, and it is hoped they will be manufacturing goods in March. They will make a general line of men's and women's woolens and some knitting yarn. G. J. White is treasurer and H. L. Hewson, general manager and buyer. They will sell direct and also through selling agents, who have not yet been appointed. They will use steam power and have a dyehouse. Five sets and twenty-five looms.

*Oklahoma, Oklahoma City. The Oklahoma Woolen Mill Co., whose new mill is partly constructed, will manufacture cassimeres, flannels, blankets and dress goods, making a specialty of fine skirtings. Dr. John Threadgill is president and treasurer of the concern; T. C. Newby, vice-president and general manager and Miss M. McKinley, secretary.

Pennsylvania, Philadelphia. A new worsted spinning mill has recently been started here, known as Freeman & Firth. They have leased space in a plant on Madison St., where they have 12 frames and a double set of drawing, on coarse and medium yarns.

Pennsylvania, Philadelphia. Ground has been broken for the erection of a new mill at H. and Westmoreland Streets, for the Shelbourne Worsted Mills, a new concern. Edgar Weil, who has been connected with Chas. Porter & Son, as superintendent of the plant, is interested in the company. They contemplate having 60 broad looms with finishing machinery, but it will be the first of the year before the plant will be ready and November the 1st ere the selling end will be known.

Pennsylvania, Philadelphia. Plans are being prepared by Saveny & Scheet for a new four-story brick building at Tulip and Dauphin Streets for James Pollock, manufacturer of carpets. The building will be 50 by 100 feet, of slow burning mill construction.

*Tennessee, McMinnville. Operations will be started about Dec. 1st by the Tennessee Woolen Mill Co., manufacturing jeans, cassimeres, linseys and convict stripes. S. G. Stratton (Lebanon, Tenn.) is president of the company; M. T. Bass, secretary and treasurer, and McArmstrong, superintendent. They will operate 2 sets cards and 40 looms. Are in the market for good second hand mixing picker and wool and waste duster.

*Virginia, Petersburg. The new rug mill to be started by Jos. C. Hirst, will be known as the Vineland Rug Co. Plant will be operated by steam and furnish employment for about 100 people. Mr. Hirst has severed his connection with the Hirst Smyrna Rug Co. at Vineland, N. J.

*Wisconsin, Prairie du Chien. The Prairie du Chien Woolen Mill Co., whose plant was destroyed by fire, have started work on construction of new building, which they contemplate having in operation by December 1st. The plant will be epuipped with three sets cards and 16 looms, for making flannels, cassimeres and dress goods. R. D. Paris is president of the company; and J. W. Paris, treasurer. S. M. Merrill and Stambach & Van Borries, will sell the product. A Dye house will also be attached to the mill.

Enlargements and Improvements.

California, Marysville. The Marysville Woolen Mills have recently added five new looms to the mill equipment.

Maine, Sanford. A new dyehouse is to be built for the Goodall Worsted Company. Work will start at once on foundations, plans having been completed.

Massachusetts, Newton Lower Falls. An addition is being made to the plant of W. S. & F. Cordingly, shoddy manufacturers, which is partially completed.

*Massachusetts, North Oxford. Operations will be started about November 1st by Weise & Nichols, who are installing additional machinery in the plant purchased from the Glen Woolen Company.

New Jersey, Hightstown. The Hightstown Smyrna Rug Co. will build a brick dyehouse.

*Massachusetts, Taunton. The Taunton Wool Stock Co., which has been in operation since May, now operates 7 sets of cards on shoddy, one set of new cards having recently been added. This concern is capitalized at $21,000; Ellis Hey is president; Wm. M. Lovering, treasurer and Wm. E. Emery, superintendent. A dyehouse is attached to the mill, which uses both steam and water power. They sell the product direct.

*New Hampshire, Franklin Falls. Work is under way on the construction of addition to the Franklin Mills.

New Hampshire, Guild. The Granite State Mills, Fairbanks & Dorr, proprietors, have recently completed installation of a 100 h.p. boiler in the mill, six broad looms, and other machinery. An addition has also been made to the picker house.

New Hampshire, Newport. Extensive improvements and additions have been made to Dexter Richards & Sons' mill. A new electric power house has recently been completed which will furnish light for the entire village. Forty new looms and one set of cards have been added to the machinery equipment. A new dye house is now under construction.

New York, Amsterdam. S. Sanford & Son are to install three additional sets of cards (Davis & Furber) with Bramwell feeds in their carpet mills.

New York, Auburn. A two and one-half story addition is under construction to the picker rooms of the Auburn Woolen Company's mill, for purpose of making room for the machinery and blending of stock.

*New York, Auburn. The Nye & Wait Carpet Company has been incorporated as the American Axminster Industry, with capital stock of $100,000. A. F. Firth is president; G. H. Nye, first vice-president; W. F. Wait, second vice-president, and F. J. Collier, secretary and treasurer. Robert Beattie of Little Falls, N. J., is on the board of directors. As previously reported the capacity of the plant will be increased, but particulars cannot be furnished at present.

New York, Jamestown. The Ahlstrom-Ashworth Co. has installed some additional spinning machinery in the plant.

New York, Jamestown. The Empire Worsted Mills have recently completed addition of a new finishing department to the mill and considerable new machinery is being installed in that and other various departments in the plant. More machinery is to be received for installation in the finishing department.

Oregon, Portland. The Portland Woolen Mills at Sellwood, near this place, will build an addition. This plant was started up in May. Three sets and 32 looms. The addition will be 40 by 80 feet, two stories, in which more carding and spinning machinery will be installed, which has been ordered. The output of the mills is well sold ahead.

Pennsylvania, Philadelphia. It is reported that the Southwark Mill Co. will build an addition 40 by 80, three stories.

Pennsylvania, Philadelphia. Plans are beeing drawn for an addition to the mill of Jacob Miller Sons & Co., Sixteenth and Reed Sts. A 2-story building for dyeing and finishing, 160 by 118 feet, will be built, also a 2-story engine and boiler house. William Steele & Sons are the engineers in charge.

Pennsylvania, Philadelphia. A large stone mill building has recently been completed for Benjamin Greer, proprietor of the Bellevue Worsted Mills.

*Utah, Provo City. Work has been started on the foundations of the new weave room for the Provo Woolen Mills Co. The building will be 75 by 152 feet and will be equipped with 25 Crompton looms.

*Vermont, Bennington. Two mules and one set of cards have been installed on the second floor of the new addition recently completed for Holden, Leonard & Co. Six new looms, which have been ordered, will also be added. They will remove the spooling and dressing departments to the annex. Mill is now run evenings.

Mills Starting Up.

*Maine, Waterville. Operations will soon be started by the Chase Woolen Mill, which has received 12 of the 14 loom equipment.

*Massachusetts, Canton Junction. The bleachery property has been purchased by Joseph Brooke &Co., representing a firm manufacturing carriage cloths at Pittsfield, Mass. The company will operate the mill as the Neponset Woolen Mill Co., and will remove the machinery at Pittsfield to this place, where all branches of work will be done, weaving, carding, spinning, bleaching and dyeing. Bids are being received for repairing the buildings and some placed with a local concern for wiring the mill for electric lighting. This probably has reference to Helliwell & Co., for whom Messrs Brooke & Co., are the selling agents.

*Ontario, Alberta, Edmonton. The new mill which we reported under construction last July for W. J. Webster is now completed and in operation, making yarns, blankets, tweeds and flannels. Two sets of cards; seven looms; steam power; dyehouse.

*Pennsylvania, Philadelphia. The Phoenix Mills at Manayunk have been purchased by S. B. & B. W. Fleisher, who will put the plant in operation as soon as possible. They propose equipping the mill with latest improved machinery for worsted spinning. Plant now has 14 combs and 20 cards and complement of spinning and twisting machinery.

Rhode Island, Westerly. A company has been incorporated to operate the idle woolen mills at Potter Hill, under the name of the Pawcatuck Woolen Mills. The parties interested are John B. Dunn and E. S. Dunn of the Dunn Worsted Mills in Woonsocket, and William J. Battey, Frank T. Trull and Thomas L. Foulkes of New York, and Charles L. Staples of Pittsfield, Me. The town has exempted the property from taxation for seven years, and about 100 new looms will be placed in the mill for the manufacture of worsteds.

West Virginia, Morgantown. The plant of the Monongahela Textile Co., which was in the hands of a receiver last May, will probably soon be started up, as the property has been leased to Philadelphia parties.

Mills Shutting Down.

*New York, Poughkeepsie. The plant of the Titus Flannel Company has been closed and company dissolved. As previously reported, Mr. Thickens will probably remove to Pittsfield, Mass.

Wisconsin, Reedsburg. The Reedsburg Woolen Mills have been closed. The entire stock, building and machinery will be disposed of by the company.

Knit.

New Mills.

*New Jersey, Beverly. The new mill at this place will be known as the Beverly Knitting Mills. They expect to begin production about the middle of November, making ladies' and children's shirts and pants. McIlvanie & Co. are the proprietors. W. N. Leech is superintendent. Roger Lamson & Co. will sell the goods. No dyehouse. Steam power. Seven knitting machines and twelve sewing machines.

*New York, Depew. Contract has been let for new buildings of the Depew Knitting Co. There will be a two-story brick mill, 100x100, and a smaller building, 50x167. Work has been going on in rented premises for some months past. The superintendent is Joseph Stead, who formerly was at Troy, Pa., from whence most of the machinery came.

New York, Johnstown. John H. Cross will put knitting machinery in the building owned by him on Townsend Ave., and engage in the manufacture of fleece linings for gloves.

*New York, Oswego. We learn that the new Nottingham Knitting Co., manufacturers of fancy knit fabrics, are in the building occupied by the Mohair Mfg. Co., and not in the Lenox Steam Laundry Bldg.

New York, Oswego. A. W. Schaufler & Co. have recently started a new plant, making fine worsted and woolen gloves and mittens for men and women. Later golf gloves will also be made. The firm comprises A. W. Schaufler; W. C. Schaufler, treasurer and general manager of the Atlas Knitting Co., Amsterdam and William Shuttleworth, connected with the Shuttleworth Carpet Mills and H. L. Shuttleworth dyeing plant at Amsterdam.

North Carolina, Kernersville. Another new knitting mill will be started here by Mrs. J. W. Beard, and her two sons, J. W. and R. B. Beard.

North Carolina, Raleigh. J. B. Martin of this place intends to start a new hosiery mill. A new building will be erected, 36 by 90, at the corner of Johnson and Railroad Sts. Thomas A. Jones, formerly superintendent of the Davis-Crews Knitting Mills at Kernersville, will be superintendent of the new mill.

*North Carolina, Wilmington. The Sterling Underwear Co. has been incorporated by E. C. Holt, J. W. Williamson and others, to manufacture shirts and underwear. Contracts have been placed for most of the machinery. Work will start at once on erection of the building.

*North Carolina, Winston-Salem. The Twin Knitting Mills, recently reported sold, will be put in operation November 1st, as the Maline Mills, by company organized with capital stock of $25,000 (paid in). Thomas Maslin is president and W. L. Liewers, treasurer. They will operate 18 knitting and 20 sewing machines on ladies' underwear, summer and winter weights. Plant will be operated by steam. Goods to be sold direct.

Ohio, Cleveland. Active operations have begun in the Standard Knitting Co.'s mill, 268 Erie Street. Concern makes vests, shawls, infants' sacks and blouses.

*Pennsylvania, Bridgeport. The Kaufman Manufacturing Co. will equip their new mill, which they contemplate having in operation by December 1st, with 150 knitting machines, for making ladies' and children's rib and flat hosiery. Fred Winderley will be superintendent of the mill, which will have a dye house attached. Steam power will be used. Will start making 500 to 600 dozen per day, increasing to 1,000 to 1,500 inside of a year.

*Pennsylvania, Conshohocken. A branch mill is under construction at this place, for Lewis E. Taubel, manufacturer of hosiery at Norristown.

*Pennsylvania, Fleetwood. Madeira & Wanner, of Lyon Station, now building a new mill at this place, expect to manufacture men's black half hose, 144 needle, when plant has been completed.

Pennsylvania, Philadelphia. A new hosiery plant will be started up soon by Frederick Rumpf and Scheer, at Coral and Fifth Streets.

*Pennsylvania, Pottstown. Work has been started on construction of the new building for the Pottstown Knitting Company, manufacturing men's and women's fine seamless hosiery. They will equip the mill with 250 knitting and 4 sewing machines.

PERSONAL RECORD.

Cotton.

T. C. Wallace has been appointed overseer of weaving at the Thorndike Company, Thorndike, Mass. He was formerly with the Falls Company, Norwich, Conn.

W. P. Wingate, late overseer of carding at the Loray Mills, Gastonia, N. C., is the new superintendent at the Ada Yarn Mill, Charlotte, N. C. Mr. Wingate was superintendent of the Ada Mill several years ago. He now succeeds W. L. Robbins, resigned.

Samuel Vaughan, recently at the Pacific Mills, Lawrence, Mass., has accepted the position of boss ring spinner for the Coosa Mfg. Co., Piedmont, Ala.

W. W. Thayer has been promoted from overseer of weaving in the number one mill of the Harmony Mills, Cohoes, N. Y., to be superintendent of the number two factory.

W. L. Towne has been engaged as overseer of weaving by D. L. Jewell, agent, Suncook, N. H.

J. M. Torrence has resigned as superintendent of the Lowe Mfg. Co., Huntsville, Ala., to organize a company to build a fine goods mill in Western North Carolina.

H. F. Smith has resigned as superintendent of the Elizabeth City Cotton Mills, Elizabeth City (N. C.), to accept the position of superintendent of the Riverside Cotton Mill, Anderson, N. C.

O. B. Parker, formerly superintendent of the United States Cotton Co., Central Falls, R. I., succeeds Mr. Knight as superintendent of the Quidnick Mfg. Co., Quidnick, R. I.

Guy G. Paris has resigned as overseer of carding with the Roger Williams Cotton Mills, Arcadia, R. I., to accept a position in the employ of the Greene & Daniels Mfg. Co., Pawtucket, R. I.

G. F. Payne of Woonsocket, R. I., has been engaged by D. L. Jewell, agent, Suncook, N. H., as overseer of frame spinning.

M. A. Price has engaged as overseer of carding with the Atherton Cotton Mills, Charlotte, N. C., succeeding the late B. Frank Hornbuckle, who was caught and whirled around the shaft several times while trying to replace a belt. His neck was broken and shoulders crushed. A wife and two children survive him.

D. A. Price has been appointed to succeed M. F. Cadle as overseer of weaving at the Mountain Island Cotton Mills, Mountain Island, N. C. He was formerly with the Mills Mfg. Co., Greenville, N. C.

Max Ohlman, Atlanta, Ga., is now assistant color chemist in the laboratory of Sykes & Street, New York.

A. A. MacWhinnie, overseer of carding in one of the West Boylston Mfg. Co.'s mills, Easthampton, Mass., has resigned in order to engage with the Massachusetts Cotton Mills, Lowell, Mass., as night overseer.

C. C. Miller, late boss dyer for the Fort Mill Mfg. Co., Fort Mill, S. C., is now filling a similar position with the McColl Mfg. Co., McColl, S. C.

William McCoomb, formerly of the Parker Mills of Fall River, has been engaged as overseer of weaving for the Whitman Mills, New Bedford, Mass. He succeeds David Syms.

H. D. Martin has secured the position of superintendent of the Danielson Cotton Mfg. Co., Danielson, Conn.

William Lathrop, overseer of weaving for the Saratoga Victory Mfg. Co., Victory Mills, N. Y., has resigned.

William Lomax has been engaged as overseer of the slashing and auxiliary departments in the Hargraves Mill No. 1, Fall River, Mass. He has been secondhand in the slashing department at the Union Mill No. 3.

Calvin Laflin of Fall River, has been engaged as spinner by the Grant Yarn Company, Fitchburg, Mass.

Albert Kaltofen has accepted the position of secondhand of spinning at the Louisville Cotton Mills, Louisville, Ky.

James Hartman, boss spinner in the Elm Grove Mill, Lincolnton, N. C., has been promoted to night superintendent. James Mauney of Kings Mountain, N. C., succeeds him.

William Hubbard, who has been employed in the cloth room of the Methuen Co.'s mill, has resigned and accepted a position in the combing department of the Arlington Mills, Lawrence, Mass.

Tom Hebden will be the successor of William Tallant as overseer of the weaving department at the Boston Mfg. Co., Waltham, Mass. Mr. Hebden has been employed by the Boston Mfg. Co. for a number of years, and is at present overseer of the slashing, dressing and drawing in departments. His son, Edgar Hebden, who is now secondhand in the slashing, dressing and drawing in departments, will succeed his father in their management.

Ernest Hardy, formerly of Gastonia, is the new overseer of spinning in the Smithfield Cotton Mills, Smithfield, N. C.

L. A. Hughes, overseer of weaving of the Florence Cotton Mills, Forest City, N. C., has become superintendent of the Cliffside, N. C., Mill.

Henry House, late of Middleville, Mich., has engaged with the Lufkin Rule Co., Saginaw, Mich., as superintendent of their tape mill.

T. B. Howard, formerly overseer of spinning at the Dublin, Ga., Cotton Mills, has charge of the carding and spinning departments of the Hampton Cotton Mills, Hampton, Ga.

W. G. Harrison, late of Pelzer, S. C., is now overseer of weaving at the Trion, Ga., Cotton Mills.

E. H. Forbes, formerly of Gastonia, N. C., is overseer of carding at the Smithfield, N. C., Cotton Mills.

O. H. Farr has begun his new duties as superintendent of the Witham Cotton Mills, Hartwell, Ga.

William H. Erskine, formerly overseer of carding for the Valley Falls Co., Albion, R. I., has been promoted to the position of agent.

A. R. Ennis, late overseer of carding with the Knoxville Cotton Mills, Knoxville, Tenn., is now filling a similar position with the Oxford Cotton Mills, Oxford, N. C.

Merton Duxbury, late of Pawtucket, R. I., has started work as boss dyer for the Heywood Narrow Fabric Co., Fall River, Mass., who have built a new mill and dyehouse.

J. P. Cooper of Boston has been elected president of the American Cotton Company, vice Albert C. Case, resigned. It is also announced that L. L. Fleming has been chosen vice-president and general manager, vice H. E. Tener, Jr., resigned. Messrs. Case and Tener, while retiring from active connection with the company, remain on the board of directors, Mr. Case continuing as chairman of the executive committee.

W. M. Campbell has accepted the position of overseer of slashing and drawing in with the Dallas Mfg. Co., Huntsville, Ala.

M. F. Cadle, overseer of weaving at the Mountain Island (N. C.) Cotton Mill, has resigned, and D. F. Price has been appointed to succeed him. Mr. Price was formerly with the Mills Cotton Mills, Greenville, S. C.

Daniel Clark, late with the Great Falls Mfg. Co., Somersville, N. H., is now superintendent of the Williams Duck Co.'s mills, Moosup, Conn.

D. Webster Bugbee, for the past 25 years an overseer of spinning in the Tremont & Suffolk Mills, Lowell, has severed his connection with that corporation.

E. E. Bartlett, superintendent of the Aurora Cotton Mills of Aurora, Ill., has been appointed to take the principalship of the cotton carding and spinning department of the New Bedford Textile School, New Bedford, Mass., in place of Mr. Broadbent, who has accepted a similar position at the Mississippi Textile School.

Rhodes Brown has been elected to succeed Louis Hamburger as president of the Swift Mfg. Co., Columbus, Ga., who was forced to resign on account of poor health.

Joshua D. Armitage has been appointed superintendent of the cloth department of the Arlington Mills, Lawrence, Mass., in place of George L. Seldon, resigned. Mr. Armitage has had extensive experience in a similar capacity in England, and for eight years he had charge of the Arlington's dressing department.

Woolen.

Frank W. Welton, of Cohoes, is now with the H. W. John-Manville Company in their asbestos factory in Brooklyn.

John C. Thickens, formerly superintendent of the William E. Tillotson Mills in Pittsfield, Mass., has sold his interests in the woolen company, which he was instrumental in organizing in Poughkeepsie, N. Y., about a year ago.

Herbert Taylor, who has had charge of the shoddy and waste department of the American Woolen Company, has resigned. He intends, after a much-needed rest, to engage in business on his own account.

Edward Sheehy, overseer of spinning in the Northern Ohio Blanket Mills, Cleveland, O., has resigned.

Daniel Sutcliffe and Robert Elliott, formerly the dyer and finisher at the Sutton Mill, North Andover, Mass., have accepted like positions at the Rochester Woolen Mills, Rochester, N. H.

John Rollinson, formerly overseer of dressing in the Livingstone Woolen Mill, Washington, R. I., is now with the Moosup Mills, Moosup, Conn.

James Rae, who has been boss of the card room at the Chapel Mills Mfg. Co., Cherry Valley, Mass., for the past two years, has been promoted to the position of superintendent. He takes the place of George W. Vickery. Joseph LaRose, who has been secondhand in the card room, takes the position left vacant by Mr. Rae.

T. N. Parent is the new overseer of carding at the Westerly Woolen Co., Westerly, R. I. He was formerly overseer of carding at the Guerin Spinning Co., Woonsocket, R. I.

John Parks has succeeded James Shaw as overseer of weaving at the Ashland Woolen Mill, Ashland, N. H.

Edward P. Powers has engaged with Beebe, Webber & Co., Holyoke, Mass., as overseer of dyeing. He succeeds J. A. McDonald, who has accepted a similar place in Ludlow, Vt.

Martin O'Toole, boss finisher at the Brown Mills of the American Woolen Co., Dover, Me., has resigned to take similar charge with the Conshohocken Woolen Co., West Conshohocken, Pa.

Benjamin Oldfield, formerly of Washington, R. I., is now overseer of finishing at the Saranac Mills, Blackstone, Mass.

William Newbury has succeeded John E. Curren as overseer of the spinning department of the E. E. Hilliard Company's new mill in Manchester, Conn.

Robert McMahon, of Providence, has secured the position of overseer of spinning in the mill of the Laurel Hill Yarn Co., Bridgton, R. I.

Corey Mitchell is superintendent of the Glenside Woolen Mills, Skaneatles, N. Y., succeeding his father, who died there the past year.

J. A. McDonald, formerly with Beebe, Webber & Co., Holyoke, Mass., has engaged with the Black River Woolen Co., Ludlow, Vt., to take charge of both finishing and dyeing.

William F. Myers has resigned his position with the Riverside Woolen Co. of Stafford, Conn., and is now at Sharon, Conn.

E. Merchant, overseer of weaving with the Marston Worsted Mill, Skowhegan, Me., has resigned.

John E. Martin, boss weaver in the Allen Woolen Mill, Rochester, N. Y., has resigned.

William Maloney is the new overseer of spinning at the American Felt Co., Glenville, Conn.

Alexander L. Levy has been engaged as carder for the Richmond Manufacturing Co., Stapleton, Staten Island, N. Y., in place of James J. Grady.

Robert P. Kershaw of Philadelphia is now in charge of finishing for the Edwards Woolen Co., Spartansburg, Pa.

A. W. Kennedy of Philadelphia has engaged as overseer of carding for the worsted yarn spinners, Wolstenholme & Clark, of Manayunk.

Thomas Hart has resigned as overseer of dressing at Winooski, Vt.

C. P. Gillman has resigned as boss weaver for the Wassookeag Woolen Co., Dexter, Me. Mr. Dexter has been here for 15 years. He was presented with a watch chain and charm by the employees.

Harry Hamill, formerly employed as an overseer of carding for a number of years by the James Lees & Sons Company of Bridgeport, Pa., and by other manufacturers, is now with C. R. Simister & Son, Manayunk, Pa.

Harry Gill has succeeded W. T. Supple as overseer of the dyeing department at the Mackenzie Mill, Bridgewater, Vt.

Joseph Gilleran of Woonsocket, is designer for the Wickford Worsted Mill, Wickford, R. I.

Charles Greenwood, designer at the Reliance Worsted Mills, Woonsocket, R. I., has resigned and accepted a similar position with F. L. Sayles & Co., of Pascoag, R. I. W. D. Hawkins succeeds him.

William Grogan is now overseer of dressing at the Ashland Woolen Mill, Ashland, N. H., having succeeded Henry Shaw.

Mr. Fitts of Pascoag, R. I., has been engaged by the Rhode Island Worsted Co., Indian Orchard, Mass., as designer in their mills.

F. Fallon is overseer of finishing at the Wickford Mills, Wickford, R. I.

Fred Erkinhauser, formerly designer for the Brightwood Mfg. Co., North Andover, Mass., has accepted a position as designer at Olneyville, R. I.

Frank R. Dean, of Lawrence, Mass., has gone to Stafford Springs, Conn., where he has accepted a position as boss finisher for the Warren Woolen Co.

Edward Devine, boss finisher at the Conshohocken Woolen Mills, W. Conshohocken, Pa., has resigned and will re-enter the employ of the Anderson Mills, Skowhegan, Me., succeeding Mr. Biddles.

Hugo Doige, superintendent, is to sever his connection with the Warren Woolen Co., Stafford Springs, Conn.

John Dyson, loom fixer at the Arlington Mills, has resigned and accepted a position as loom fixer for M. T. Stevens & Sons, Andover, Mass.

John Calvin, manager and overseer of carding at the plant of the Spring Lake Mfg. Co., near Washington, R. I., has resigned.

John E. Collins of the Georges River Mills, Warren, Me., is the new overseer of weaving at Oakland, Me.

John Conlon has resigned as boss finisher in the South Bend Woolen Mills, South Bend, Ind., and gone to Peru, Ind.

Edward Conley, overseer of reeling at the Wm. Tinkham Co.'s mill, Harrisville, R. I., has resigned.

Frank R. Bean, formerly finisher at the Cocheco Mills, East Rochester, N. H., later at the Sutton Mill, North Andover, has been engaged to take charge of the finishing room at Haile & Frost Mfg. Co., Hinsdale, N. H.

Alfred Baldwin has been appointed designer and superintendent of the Amos Abbott Co., Dexter, Me., succeeding J. H. Hendry.

George N. Biddles of Potter Hill, R. I., is now overseer of finishing in the Anderson Mills of the American Woolen Co., Skowhegan, Me.

C. W. Bates, superintendent of the Slingsby Mfg. Co. of Frantford, Ont., has resigned.

Robert Browning, overseer for the carding for the Oxford (N. S.) Woolen Company, for ten years, has removed to Westerly, R. I.

James H. Barnett, overseer of dressing for the Rock Mfg. Co., Rockville, Conn., for several years, has resigned to fill a position with the Worcester (Mass.) Woolen Mill Company.

S. W. Brown, who succeeded John Eastwood as finisher at the F. S. Mackenzie Mill at Bridgewater, Vt., was formerly finisher at the Reynolds Mfg. Co., Davisville, R. I. Mr. Brown was out of the mill a number of months on account of poor health.

Michael Brennan of Dedham, Mass., overseer of carding in the mill of Cole, Senior & Co., Medway, Mass., has resigned.

Knit.

C. H. Porter, formerly of Cohoes, N. Y., has been appointed principal of the knitting department of the New Bedford Textile School, New Bedford, Mass.

Thomas A. Jones, superintendent of the Davis-Crews Knitting Mills at Kernersville, N. C., has resigned, and will be superintendent of the new knitting mill to be erected at Raleigh, N. C., by J. B. and E. M. Martin.

Charles E. Hollick, formerly of Geo. E. Kunhart's Mill, Lawrence, Mass., has been engaged as superintendent for the new Hewson Mill at Amherst, N. S.

Howard Dudley, boss dyer at the Mankato Mills, Mankato, Minn., has resigned. His successor is Mr. Tanzey.

P. K. Green, Fort Wayne, Ind., has accepted the position of superintendent of the Shamrock Mills, Winston, N. C.

Harry L. Clow has succeeded Frank Clow as overseer of knitting at the William Clow & Son Mill, Lakeport, N. H.

Daniel A. Coughlin, Lowell, Mass., has accepted the position of fixer with W. S. Mills, manufacturer of infants' fine underwear, Bridgeport, Conn.

W. Buchanan, formerly overseer of spinning and winding at the Walter Aiken Sons Hosiery Mils, Franklin Falls, N. H., will take charge of carding and spinning at the Sulloway Mills, that city, nights.

Deaths.

George W. Weeks died October 7, in Clinton, Mass. In a railroad accident last April in Missouri he received severe injuries, from which he never fully recovered. The deceased was born in 1838, and at an early age secured employment with the Lancaster Mills. He successively rose from his first service as "runner boy" to the positions of clerk, paymaster, superintendent, and in 1877, on the death of Franklin Forbes, to agent of the corporation, a position which he held for 19 years, retiring from active business life in 1896.

Arthur H. Stephenson, a member of the firm of Stephenson & Son, yarn merchants, Philadelphia, Pa., died recently of typhoid fever.

Charles Lockemy, superintendent of the Richmond Cotton Mill, Laurel Hill, N. C., was shot and instantly killed by the father of a boy in his employ whom he had discharged.

Henry M. Rogers, treasurer of the Gloucester Mfg. Co., Gloucester, N. J., died at his residence in Philadelphia, after a few days' illness. For 37 years the deceased was connected with the Gloucester Print Works. He started in the capacity of an office boy, but advancement followed quickly, so that for the past 15 years he filled the position of treasurer of the company.

H. F. Lord died the 15th of September at Worcester, Mass. He was in the employ of the Crompton & Knowles Loom Works.

Joseph P. Truitt, treasurer of the Keystone Spinning Mills Company, Philadelphia, died last month. The deceased was a member of the old firm of Thomas Dolan & Co., and on the dissolution of that concern he assumed the active management of the spinning mill.

Alexander M. Fyfe, a well known designer of Utica, N. Y., died October 9. The deceased was born in Scotland, and came to this country at the age of 24 and entered the employ of the Globe Woolen Company 25 years ago, where he has been continuously employed, with the exception of a period of seven years, when he was located in Providence and North Vassalboro. He leaves a widow and five children.

William E. Fields, a prominent citizen of Kinston, N. C., died Oct. 14th, in his fifty-fifth year. He was vice-president of the Kinston Cotton Mills and Bank of Kinston, with interests in the cotton mills, knitting mills and other enterprises.

Amos H. Miller, a well known wool waste dealer in Boston, died early last month.

Philip Jagode, one of the oldest members of the Philadelphia wool trade, died last month. He was born in Germany in 1842, and from his boyhood had been in the wool trade, starting with the firm of David Scull & Co. On the retirement of Mr. Scull, in 1891, the business was continued by Philip Jagode & Co.

Thomas Barrett, head dyer for the Renfrew Mfg. Co., Adams, Mass., died October 17, after a short illness.

William D. Cadwell, one of the best known cotton mill agents in New England, died on the 10th of last month. Mr. Cadwell was born in Montpelier, Vt., in 1834. He worked in the Merrimac Cotton Mills in Lowell, in early life, and in 1866 went to Nashua, as master mechanic at the Nashua Mfg. Co.'s mills. Soon afterward he was made superintendent, and in 1871 agent of the Jackson Cotton Mills. In 1891 he also became agent of the Nashua Mfg. Co. About two years ago he resigned as agent of the Jackson Company. It was largely through his business capacity that the cotton industry of that city has made such remarkable progress. A wife and two children survive him.

Henry A. Sanders, proprietor of the Richmond Mfg. Co., Stapleton, S. I., died recently, at the age of 27, at his cottage in Ocean Grove. He started this mill about two years ago, manufacturing cotton and woolen goods. It is now run by his brother.

QUESTIONS AND ANSWERS

Under this head we undertake to answer, free of charge, to the best of our ability, any pertinent inquiry pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring, not for publication, but as an evidence of good faith.

For reply to questions that are not of general interest to readers of textile journals, such as those relating to the compositionof yarns, analysis of fabrics, etc., we will charge the enquirer with the cost of the investigation.

Starch for Finishing Cotton Goods.

Editor Textile World:

What are the comparative merits of tapioca starch and potato starch in finishing cotton goods? Can you state the results of substituting tapioca for potato starch? I am informed that both are root starches and of similar character with the difference that tapioca starch boils thinner. Thin boiling corn and wheat starches sell from 3/4 to 1 1/2 cents per lb. higher than thick boiling corn and wheat, because they penetrate and consequently fill better. It seems an anomaly that thin boiling root starches like tapioca can be had from 3/4 to 1 1/2 cents per lb. under the price of thick cooking root or potato starches. We think the matter deserves more attention than it has received so far.

Starch (280).

We invite our readers to give their views on the above question which is a very interesting one to the cotton industries.

Caustic Used for Mercerizing.

Editor Textile World:

How much caustic is used on the average for mercerizing cotton yarn?

Bleach (281.)

Recent tests of the Shuman Continuous Process Mercerizing Machine, which is controlled by the Pennypack Yarn Finishing Company of Holmesburg, Philadelphia, Pa., show that a 120 lb. batch was turned out every twenty minutes with a small size machine, and that one pound of caustic was used for each five pounds of yarn. The labor of handling required four boys.

Books on Cotton Dyeing.

Editor Textile World:

Please recommend some good book on cotton dyeing that would be useful to a dyer in a yarn mill where a great variety of shades are applied to many different grades of cotton.

Utah (279).

We can recommend Beech's "The Dyeing of Cotton Fabrics," price $3.00, a work confined to cotton dyeing of both yarn and cloth; the "Manual of Dyeing," by Knecht, Rawson and Lowenthal, a very elaborate and valuable treatise on the general subject of dyeing, price in three volumes, $15.00, and the "Dyeing of Textile Fabrics" by Hummel, price $1.75.

Self Instruction in Designing.

Editor Textile World:

I am employed in a commission house and am desirous of advancing. I would like to study designing at home. What course should I pursue and what books would you recommend me to study?

Advance (278).

The Correspondence schools can help a great deal. We would suggest that Advance read the series of articles entitled "Guide to Weaving," by Ivo Kastanek, now appearing in the Textile World. It treats only of weaves, beginning with the simplest. We can also recommend "Woolen and Worsted Manufacture," by Beaumont, price $2.00. The manual operation of picking out weaves is a very simple one and could be taught to you in half an hour by one understanding it. Skill in this work will come only with experience. The dissection of fabrics is a somewhat more difficult operation but it can also be learned by self-instruction. In the article in the October issue of the Textile World entitled "Analysis of Union Goods by the English and by the Metric System," is a method of dissecting of which we believe a description has never before been published.

Formulas.

Editor Textile World:

I would like formulas for reducing degrees Centigrade to degrees Fahrenheit and vice versa.

Hot and Cold (284).

To reduce Centigrade to Fahrenheit, multiply 180 by the number degrees Centigrade used as a decimal, and add 32. This is expressed by the formula: $(180 \times C) + 32 = F$.

To reduce Fahrenheit to Centigrade, substract 32 from the number of degrees Fahrenheit and divide by 180. This is expressed by the formula: C = F — 32 ÷ 180.

Varnish for Drawing Rolls.

Editor Textile World:

Referring to the question of varnishing rollers, I have had quite an experience on different kinds of varnish, as I have always carded where there were combers, and the comber roll is the hardest roll to keep properly varnished. I find most mills varnishing comber rolls three and four times a week. I varnish mine once a week and find them in very good condition when taken out.

I have also had trouble with the varnish eating or rotting the leather, and like most carders do today laid the trouble to poor leather on the rolls. It is surprising to see the unnecessary expense brought on most companies for roller covering, because the rollers do not receive proper care with the right kind of varnish. I use a varnish made of brown glue, oil origanum, chrome green and acetic acid. Acid is what eats the leather. Most carders use a varnish that takes too much acid; with this varnish a roller can be prepared for use in fifteen minutes. Dane.

Cost of Hosiery.

Editor Textile World:

I would like to know the method of estimating the cost of hosiery. Can you tell me where I can find such estimates of cost? Dixie (275).

Our correspondent will find on page 326 of the August, 1901, issue, and page 716 of the October issue of the Textile World, estimates of the cost of half hose and ladies' hose. These estimates were made by practical knit goods manufacturers, and will, doubtless, give Dixie the information he desired.

Varnish for Drawing Rolls.

Editor Textile World:

We have been using a varnish on rolls, the composition of which I do not know. It seems to weaken and rot the leather. Can you give me the composition of a good covering for such rolls, something that will not injure the leather?
Decker (275).

We have referred this inquiry to some practical cotton manufacturers; following are some of the replies received:

A varnish which has been found very satisfactory is made of ordinary carpenter's glue dissolved in acetic acid, and mixed with Venetian Red paint.

The proportions vary, hardly any two men having the same idea as to thickness of the mixture. With a little judgment, however, that is an easy point to decide for oneself. Care must be taken not to get in too much acid, as it takes hold of the glue, starts the lap, and tends to make the leather spongy.

This may have been the trouble with the varnish used by the correspondent, if he used acid or vinegar. Ben Shaw.

Another overseer writes as follows:

From my own experience I have found that one kind of varnish may do well for one kind and weight of leather, but would not do at all for a leather of the same weight or finished by another firm. Each firm, though to a great extent working on similar lines, has a method of their own with a material of their own liking for working into the leather, which will repel some kinds of varnish, but have an affinity for the ingredients in some other make of varnish.

This, with the variable temperature and humidity in almost all card rooms, as well as other rooms in the mill, especially while the rolls are stopped, make it difficult to hit on the ingredients for a varnish that will suit all leathers under the varying circumstances.

It is a common fact that men who have had good success with some peculiar kind of varnish at one mill, have not the same results at another mill. For cotton drawing frame rolls I have had good success with a dressing made as follows: 1 oz. fish glue, 1 oz. isinglass, 1 oz. rawhide boiled to a jelly, 1/4 pint acetic acid, 1/2 pint vinegar; all boiled in a glue kettle until thoroughly dissolved; keep well corked in a dry, cool place; when needed, add hot vinegar and red lead (powdered) to give it the consistency of cream. When in a very moist atmosphere, as in dog days, put in a little more red lead, as this will tend to absorb the extra moisture in the leather, and with the vinegar and acetic acid will dry quick, forming a good coating to keep the moisture from the leather.

As a rule, it is not the varnish that rots the leather, it is rather the extra moisture that gets into the leather, as in belts, etc. The cots either open out at the points or stretch so that they slip off. After a roll has been varnished a few times, it does not expand and contract like a belt; it may expand, in which case it will either flute or slip off.

I think it a very profitable subject. I learned much about leather when a boy, as my father ran a large shoe shop, and

I learned much from him about preparing leather; during my mill life I have noted closely its effects in connection with varnishing rolls. Paul.

New Publications.

The United Kingdom and Its Trade; by Harold Cox; Harper and Brothers; London and New York; Price $1.00.

While the importance and desirability of foreign trade is admitted and our merchants and manufacturers are ready to put forth the utmost exertions to sell their goods in foreign lands, there is a widespread reluctance to reading and studying books on the subject. Usually such works are a dreary and unsystematic compilation of statistics that repel, and illogical conclusions that deceive the reader.

Of quite a different character is Harold Cox's work, The United Kingdom and Its Trade. It is the first of a series that is to include all countries in its scope and form a complete treatise on economics applied to the trade of the world.

Following is an abstract of the table of contents: Area and Population; Occupations of the People; Agriculture; Fisheries; Mineral Wealth; External Trade; Geographical Distribution of British Trade; Analysis of British Trade; Shipping; Banking and Currency; Means of Communication; The Post Office; Weights, Measures and Coins; Public Revenue; The Income Tax; Death Duties, Inhabited House Duty and Land Tax; Stamps, Excises and Customs; Non-Tax Revenue; National Expenditure; The National Debt; The Customs Tariff.

American-Asiatic, Seattle, Washington.

We have received a copy of the first issue of this journal which is devoted to the interests of the trade between America and Asia. It is to Asia that our exporters are looking with strongest hopes for the increase in the foreign trade of the United States, and this journal will undoubtedly be able to supply a large number of our merchants with information regarding the commerce of the Orient.

The American Cotton Industry; by T. M. Young; Methuen & Co., London; Charles Scribner's Sons, New York.

This is the series, published in book form, of the newspaper articles by the correspondent of the Manchester, Eng., Guardian, who accompanied the delegation of English cotton manufacturers on their recent visit to this country. A considerable part of these letters are already familiar to the American public. The author watched us closely while here and has apparently recorded his observations to the smallest detail from the organization of our trusts to the bill of fare of a 25-cent dinner in a Manchester, N. H., restaurant.

Americans cannot fail to be entertained and instructed by this English view of themselves.

Bibliography of the Chemistry of Textile Fibres; by Jules Garcon; Gauthier-Villars et fils, 55 Quoi des Grands-Augustins, Paris; Price $1.50.

This work includes the books and periodicals treating of the chemistry of the textile fibres published in English, French, German, Italian and Spanish previous to 1893. The works are classified according to languages and indexed to permit of reference to any subject or author.

Veredelungsverkehr in the Textile Industry; by Dr. S. Tschierschky, Duesseldorf, Germany.

In Europe a large quantity of partially manufactured products are sent from one country to another to undergo some process and be returned to the place of origin. This business is called Veredelungsverkehr by the Germans and it has become a considerable factor in European commence. To prevent its becoming a means of evading import taxes, it is subject to strict regulations.

The author of this pamphlet is the secretary of Rheinland and Westphalian Dyers and Printers' Association, which represents trades that are largely interested in this commerce. He gives an interesting outline of the trade based on personal knowledge of the facts, and shows how closely the industries of the different countries are bound together.

Graphic Chart of Yarn Quotations; E. Reise, Yarn Dealer and Commission Agent, Mulhausen, Germany.

This chart shows the fluctuations of prices of zephyr, English worsted, shoddy, cotton, pulled wool, black shoddy, white shoddy and cotton yarn since January, 1886. The prices since that time are plainly markeed and show at a glance the movement of prices during the period named.

The Properties of Spun Yarn and Testing the same; by Heinrich Brueggemann; Arnold Bergstraesser, Stuttgart; 1 vol. and Atlas; Price $2.00.

The subject is treated in this work both from a theoretical and practical standpoint. It covers all textile materials, first describing the raw materials and the principles upon which all systems of yarn numbering are based. The methods of determining the length and weight of yarn next claim attention.

The different systems of yarn numbering in use throughout the world are explained and compared in detail.

Instruments for determining the size, strength, smoothness, twist, moisture, etc., of yarn are exhaustively treated both practically and theoretically, making this section of value to the instrument maker, student and manufacturer.

Considerable space is given up to conditioning of textiles.

The atlas contains numerous illustrations and drawings of the devices referred to in the work. The text is in German.

Methods of Applying Clothing to Top Flats; by H. Brueggemann; Theodore Martin, Leipzig.

This practical treatise first appeared in the Leipziger Monatschrift fuer Textile Industrie and is now issued in pamphlet form owing to the demand for copies which could not otherwise be supplied. A separate chapter is given to each one of eleven different methods of fastening clothing to top flats. The description, which is in German, is freely illustrated. These diagrams make the work of value even to those who do not read German.

Bonaparte in Egypt; by Captain Thurman; Emile Paul, 100 Faubourg Saint-Honore, Paris.

This account of Napoleon's Egyptian expedition is taken from the correspondence of a captain in the French army and is, therefore, the story of one on the spot. It presents this campaign in a manner different from what present day readers are accustomed to, and more in the style in which we have had the story of the Spanish, Philippine and South African war told to us. It adds a new interest to the story of how Napoleon inspired his troops by pointing to the pyramids with the words, "Forty centuries look down upon you," to have it told by an eye witness. The work, which is in French, is freely illustrated and has been carefully edited by le comte Fleury.

Water; Its Composition, Testing, and Effects; by H. Bluecher; Otto Wigand, Leipzig; Price, $2.50.

This is a compact treatise on the physical and chemical properties of water, including the composition, testing and effect of water. Of especial value is the chapter on the effect of water on mineral and organic bodies. The concluding sections treat of the use of moving water and water pressure. The work is designed for the use of doctors, health officers, farmers and students in general. The text is in German.

Industrial Syndicates; by Paul de Rousiers; Armand Colin, Paris; price $1.25.

An earnest study of the Trust question has evidently been made by M. de Rousiers, and he presents his conclusions in this volume. He treats separately the American trust, the German cartel and the French industrial syndicates, as different phases of the present industrial development. The author has evidently tried to present a fair view of this perplexing problem, both in its national and international aspects. The text is in French.

The Fireside; A Course in Domestic Economy, by Mme. Augusta Moll-Weiss; Hachette et Cie, Paris; Price, $1.00.

The authoress is in charge of the school of domestic economy at Bordeaux, and presents in this work an outline of the instruction given in that successful institution.

The work is divided into chapters, called lessons, each one treating of a particular subject. The first is a general statement of the importance and object of the domestic economy. The following outline of the contents shows the ground covered by the work: Order; Property; Nourishment; Clothing; Lodging; Sickness; Care of Children; Cuisine. The work is freely illustrated, and arouses the reader's interest in the common, but important, affairs of life. It is a textbook designed for future housekeepers. The text is in French.

Cassier's Magazine for November.

The November or machine shop number of this well known magazine deserves some special notice. It is twice its regular size and contains practical articles profusely illustrated, among which we notice the following: Compressed Air in Machine Shop and Foundry; The Multiplication of Cutting Tools; Cranes for Machine Shops; Rewarding Machine Shop Labor; Portable Machine Tools; Progress and Education; American Milling Machines; Limit Gauges in the Work Shop; The Question of Apprentices; The Machine Tool Design; Piece Work; Machine Shop Floors; The Work Shop Tool Room; Foundry Appliances; Grinding Machines; Heating Work Shops. There are 270 pages occupied by the reading matter and illustrations which, as the above outline of the contents shows, cover a wide range of subjects relating to the machine industry.

New Color Cards.

Naphtogene Blue 2R, Berlin Aniline Works, 213 Water St., New York City.

This card shows eight shades of blue on bleached, unbleached and mercerized cotton yarn and cloth, dyed with Naphtogene Blue 2R and diatized and developed with Beta Naphthol.

Chrome Fast Red G; Berlin Aniline Works, 213 Water St., New York City.

This card shows fifteen samples of red dyed with Chrome Fast Red G on wool yarn and slubbing.

Mode Shades on Cheviot Yarn; Farbenfabriken of Elberfeld Co., 40 Stone St., New York City.

Sixty-six shades varying from very light to dark on worsted yarn. In addition to the usual formulas a conversion table is given by which the equivalents of the percentages are given in fractions of an ounce.

Phenedine Brown; Sykes and Street, 85 Water St., New York City.

This card shows six samples of cotton yarn colored different shades with various brands of Phenedine Brown.

St. Denis Autogene Black; Sykes and Street, 85 Water St., New York City.

This circular gives detailed information for the application of the well known St. Denis Autogene Black on all classes of cotton goods. It should be in the possession of every dyer as he will find it gives him reliable instruction regarding the handling of a dye that has given excellent results in the dyeing of cotton goods.

Anthracene Chrome Red A. Cassella Color Co., 182 Front St., New York.

Four samples of woolen yarn and cloth dyed with Anthracene Chrome Red A are shown on this card, along with full directions for the application of the dye.

Azo Wool Blue B. Cassella Color Co., 182 Front St., New York.

On this card are shown six samples of woolen yarn and piece goods dyed with Azo Wool Blue B.

Cyanole A. B. Cassella Color Company, New York, N. Y.

On this card are shown two samples of wool goods dyed blue with Cyanole A B, one with 1 1/2, the other with 3 per cent.

Diazo Fast Black S D. Farbenfabriken, New York.

This card shows three samples of cotton yarn dyed with Diazo Fast Black S D and one sample of cotton cloth dyed with the same color.

Azo Merino Black B and 6B; Cassella Color Co., 182 Front St., New York City.

This card has six samples of piece goods dyed with varying shades of blue and black. Two of these samples are striped with white cotton showing the clear effects that can be obtained in this way.

Amido Naphthol Red G, 2B and 6B; Meister Lucius & Bruning, Hoechst on Main, Germany.

This card shows three samples of woolen cloth and three of woolen yarn colored with the above named dyestuffs. Full directions and formulas are given.

Benzo Fast Scarlet 5BS; Farbenfabriken of Elberfeld Co., 40 Stone St., New York City.

Five samples of cotton cloth; two dyed and three printed with Benzo Fast Scarlet 5BS, are shown on this card.

Business Literature.

Pennsylvania Museum and School of Industrial Art, Philadelphia, Pa. Report of the Trustees.

This report contains the usual information including a list of the officers and trustees, report of the president, Theodore C. Search, a detailed report of the Museum, report of the principal, list of donations, prizes, report of the treasurer and list of patrons.

Mechanical Induced Draft. Buffalo Forge Co., Buffalo, N. Y.

This is an attractive booklet of sixteen pages, containing illustrations of the well known Buffalo Fans for Mechanical induced draft, built by the Buffalo Forge Co., Buffalo, N. Y.

Engines. Buffalo Forge Co., Buffalo, N. Y.

This is a booklet of sixteen pages devoted to the various types of engines built by the Buffalo Forge Company, Buffalo, N. Y. There are shown Centre-Crank Horizontal, Self-Oiling and Open Frame, Simple; Centre-Crank Horizontal, Self-Oiling and Open Frame, Compound; Side-Crank Horizontal, Self-Oiling and Open Frame, Simple; Side-Crank Horizontal, Self-Oiling and Open-Frame. Compound; Double Upright, Double-Acting, Enclosed, Self-Oiling; Double Upright, Single-Acting, Enclosed, Self-Oiling; Single Upright, Self-Oiling and Open Frame, Simple; Single Upright, Self-Oiling and Open Frame, Compound; Single Upright, Marine Type, Open Frame, Simple; Single Upright, Marine Type, Open Frame, Compound.

Aniline Black. Geisenheimer & Co., 189 Front St., New York City.

This is a pamphlet of sixteen pages containing a valuable treatise on the dyeing of Aniline Black. It is by K. Oehler, Offenbach, Germany, the well known manufacturer of aniline colors. His works are the largest of the kind on the continent of Europe, the annual production of aniline salt being about 4,000 tons. Geisenheimer & Co. are the agents for the Oehler colors and also for F. A. Sarg's Son & Co.'s Vienna Glycerine. They are also extensive dealers in dyestuffs, drugs and chemicals, etc. A copy of the pamphlet will be mailed upon request.

Davidson Propeller Fans, Massachusetts Fan Co., Waltham, Mass.

Are sending out an attractive catalogue containing illustrated description and price list of the various types of propeller fans manufactured by this well known company. There are also many useful tables giving pressure of water, decimal equivalents of an inch, weight of iron pipe per foot, areas of circles, etc.

Stirling Disc Wheels, Massachusetts Fan Company, Waltham, Mass.

A pamphlet containing price list and illustrated descriptions of the "Stirling" Disc Wheels, the construction of which presents many novel features.

Buffalo Forge Company, Buffalo, N. Y.

This pamphlet describes a complete line of the forges built by the Buffalo Forge Company, which have become so well known throughout the world. The pages are profusely illustrated and a copy of the catalogue should be in the hands of all interested in the subject of forging.

Textile Almanac.

The Textile Department of the American School of Correspondence, 156 Tremont St., Boston, Mass., have issued an attractive hand book descriptive of their textile manufacturing courses, compiled on the plan of an almanac, giving useful information in regard to the different processes under a calendar for each month, and at the same time illustrating graphically the courses taught at the school and giving a synopsis of the work. Those interested in the subject will find the pamphlet useful.

Fan Chat. Massachusetts Fan Company, Waltham, Mass.

This is an attractive booklet describing various types of ventilating fans made by this well known company.

Your Painting Bills Made Smaller. F. E. Hook, Hudson, Michigan.

This booklet describes the "Best" Pneumatic Coating Machine used for applying paint to surfaces and taking the place of a brush. There are thousands in use today all through the United States and giving good satisfaction. It is claimed that one man with one of these machines can cover from 20,000 to 25,000 sq. ft. of surface a day. Copies of the booklet and further information will be furnished upon application to F. E. Hook, Hudson, Mich.

New Boston Address.

Messrs. Sykes & Street, importers and dealers in dyestuffs, chemicals, etc., have removed their Boston office to 396 Atlantic Ave. Mr. Alexander Young Davison, formerly manager of their Philadelphia office, has assumed charge of the Boston office. Mr. William J. Wall, who has been connected with the firm's Philadelphia office for the past six years, succeeds Mr. Davison as manager in Philadelphia.

Lowell Textile School.

Editor Textile World:

It was rather of a surprise to read the Notes from Lowell in your last issue, and I shall be glad if you will insert the following in your November issue, because

I believe the Notes convey a wrong impression, as will be shown.

In the first place, all students of the Lowell Textile School, especially those who take a special course, do not receive a record for weaving, also, the possibility is that if your correspondent had questioned that student, he would have found out that the said student was the same as a good many more in other walks of life; the small details are beneath their notice. All students of the school have to take a certain amount of hand loom work before they run power looms and in that room they draw in their own warps, so must know the harness and side to commence at.

We lay soecial stress on the cover or face of cloth, believing that it adds to the value of the cloth and costs nothing to obtain it.

We presume that C. F. T. has reference to plain cloths although he does not say so; such being the case we would answer his question as follows:

When drawing in plain harness, you would commence on the back harness and at the right hand side, when there is no hander in; when drawing in fancies you commence where the draft calls for.

The leese rods are placed with the ends from back harness over back rod or opposite to this, according to whether the overseer has a way of his own or allows the fixer to please himself, but the first is in all probability the best, especially if four harnesses are used for plain work; whether the back harness ought to be lifted or not when picking from the shipper side is a question of judgment.

Your correspondent evidently chose the student, and if he desires to be enlightened upon such so-called simple matters why does he not attend the evening classes and see for himself whether such things are taught or not? It would cost him nothing and he would then be more fitted to write for a textile paper.

Hector.

The Davidson Fan.

Men with a sprinkle of gray in their hair, who protest that they feel as young as ever, remember when pure air had no place in schemes of education. School rooms were foul-smelling, ill-ventilated holes. The wonder is that the poor children learned anything and that so few of them broke down in the chase after knowledge.

All that is changed now. The proper ventilation of schools is as important as the proper training of teachers. In Boston, Mass., a dozen public schools have been equipped with Davidson fans and steel plate fans both of the belted and direct connected types, supplied by the Massachusetts Fan Co. of Waltham, Mass.

Readers of this journal know that the company produces a variety of ingenious contrivance for ventilating as well as for drying, heating and mechanical draft. Apparently the apparatus made by the company is in high esteem at institutions of learning.

An outfit supplied to the Collis P. Huntington Memorial Library at the Hampton (Va) Normal and Agricultural Institute consists of two 80 motors, Renold silent drive and hot blast coils.

Both a steel plate and propeller type fan have been ordered for a new school in Bridgeport, Conn., and special cone wheels for schools in Bristol, Conn., and Long Branch, N. J. Ventilating fans made by the Massachusetts Fan Co. have been supplied to the School Street and Salem Street schools in Fitchburg, Mass. Apparatus made by the company supplies fresh air at the Rotch Metallurgical Laboratory, Memorial Hall, New Architectural building, Stillman Infirmary, Semitic Museum and Boylston Hall addition, Harvard University.

Scales and Testing Devices.

We are constantly in receipt of letters of inquiry concerning the special line of self-calculating scales, reels, yarn and cloth strength testers, twist counters, etc., which were the invention of Mr. Guild, formerly a member of this firm, and which were manufactured by Guild & Lord up to 1890, at which time that branch of the business was sold to F. B. How, later succeeded by How & Bassett, whose present address, we believe, is Norfolk Downs, Wollaston, Mass. Parties who write to us are hereby informed that we have not had any interest in this business for the last 12 years, and that enquiries and correspondence should be addressed to the parties concerned.

Free Test of Belting.

The Graton & Knight Mfg. Co., Worcester, Mass., make what is certainly a fair proposition, and one which any manufacturer can avail himself of without risk. It will be noted in their advertisement, which appears in another column, that they are willing to send a trial belt of "Royal Worcester" belting, in order that a manufacturer may test same on his own machinery, and be under no obligation to keep it unless absolutely satisfactory in every respect. This is a very large and reliable concern, and they have been making good old fashioned oak tanned belting for 50 years.

New Orders.

Following are some of the orders received recently by the American Blower Company, Detroit, Michigan: Composite Board Co., Niagara Falls, large drying apparatus; Lumiere North American Co., Burlington, Vt., heating and drying apparatus; Bryn Mawr College, Bryn Mawr, Pa., mechanical draft apparatus; Wellesley College, Wellesley, Mass., mechanical draft apparatus; Lehigh Valley Silk Mills, South Bethlehem, Pa., heating plant and forced draft.

*Virginia, Portsmouth. It is expected that about 50 people will be given employment in the knitting mill proposed at this place for making a fine grade of hosiery. This is the plant in which R. S. Brooks and others are interested. Contract for the building has not yet been let.

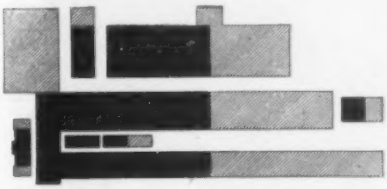
*Wisconsin, Reedsburg. The Reedsburg Woolen Mills advise us that they are closing down, pending some changes, not yet fully decided upon. The stock of woolen goods has been sold.

New Works of the B. F. Sturtevant Company.

The accompanying illustration shows the new plant of the B. F. Sturtevant Company at Hyde Park, Mass., which is now nearing completion. The buildings are arranged to allow of easy enlargement in the future. The construction consists of steel interior columns and main steel girders with heavy brick walls, wood timbered floors and plank roof. Electric power is used throughout, the current being generated at a central power station of the company.

The engines are of the condenser type and the exhaust steam is utilized for heating, being reinforced by the addition of live steam at reduced pressure.

The pattern building is of fire-proof construction and located near the foundry. The foundry is equipped with narrow gauge railways bedded in concrete and used for distributing material throughout the works. Traveling cranes run through this building for the greater part of its length.



Like the rest of the plant, the building devoted to the manufacture of fans, heaters, etc., is provided with every convenience for handling the material and doing the work. It is three stories in height and of typical mill construction.

The office is a model of its kind and serves as headquarters for the entire business. It is three stories high with a finished attic for additional drafting space.

Beginning with the power plant the mechanical draft apparatus, the engines and generators and the exhaust head will be of Sturtevant make; buildings will be heated by the Sturtevant system, the machinery driven by motors of the same make and Sturtevant fans and blowers are used throughout the works.

Taken as a whole the plant is a model of its kind and the B. F. Sturtevant Company will be able to turn out work even better and more economically than heretofore.

R. B. Denny.

The Canton Bleachery, at Canton Junction, Mass., has been sold to the Neponset Woolen Mills Co. The property includes the large stock mill which will be equipped for the manufacture of carriage cloths.

The Templeton Mills, at Otter River, Mass., has been purchased by J. M. Bennett. Both of these transactions were negotiated by the well known mill broker, R. B. Denny, 143 Federal St., Boston, Mass.

Ice Rakes.

The Ice Rakes sold by Homer F. Livermore, 85 Pearl St., Boston, Mass., are especially adapted to canal racks. They furnish different sizes, measuring distance between teeth from centre to centre exactly as the bars in the canal racks are measured.

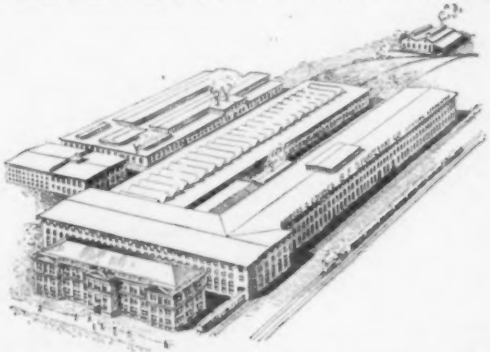
Another good feature is that the two bars on the two end teeth afford the user considerable advantage in dragging up the material which may have blocked up the canal: anchor ice, dead leaves, twigs, etc.

Linnehan, Newbert & Co.

The firm of J. W. Linnehan & Co., importers and dealers in dyestuffs, chemicals, etc., 185 Fort Hill Square, Boston, Mass., has been succeeded by Linnehan, Newbert & Co., who will carry on the business at the same address, with increased facilities.

A Bright Weave Room.

The Goodall Worsted Co., Sanford, Maine, has just completed a brick mill 104x159 feet, the upper floor of which is used as a weave room. The building is solidly constructed, and the weave room is especially well lighted by sheet metal skylights made and erected by E. Van Noorden Co., 960 Massachusetts Ave., Boston, Mass.

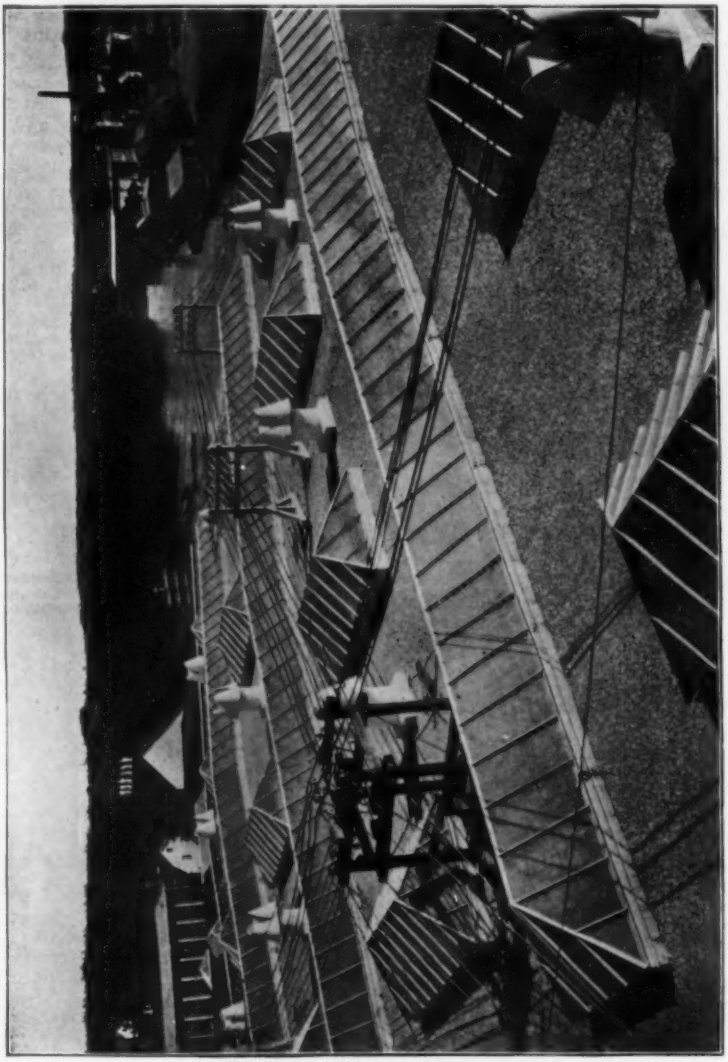


Owing to the heavy snows that occur in that part of the country, it was not deemed advisable to use the saw tooth style of roof, and Mr. Hollinrake, the superintendent, decided to use a flat roof, on which are four hip skylights 92 feet 3 inches long, of which three are 8 feet 4 inches wide and the fourth is 6 feet 6 inches wide. Between these four and

placed at regular intervals, are twelve smaller skylights each 8 feet 4 inches wide by 17 feet long, and in the space between the last skylight and the north parapet wall, are four skylights 7 feet 9 inches by 8 feet 4 inches. In all there are about 5,800 square feet of glass surface, of which 40 per cent. is wired glass of the Maze pattern, and 60 per cent. is unwired ribbed glass.

The room is also ventilated with twelve Clover Leaf ventilators 30 inches in diameter, also made by E. Van Noorden Co.

The Goodall Worsted Co. is a prosperous concern and is from time to time adding to its plant. Its members have promoted and put into operation an electric railroad connecting the town of Sanford with the Boston & Maine R. R. at Springvale, two miles distant, at one end,



THE ROOF OF THE NEW GOODALL WORSTED MILL, SANFORD, ME.

The weave room walls and ceiling have been white-washed, and this in combination with the overhead light, and also the windows on one side of the building, makes an exceedingly well lighted weave room. Mr. Hollinrake was determined to spare no pains in the lighting of this room and the result is entirely satisfactory.

and with Kennebunk, West Kennebunk and Cape Porpoise, twelve to fifteen miles distant, at the other end. This road carries mail, baggage, express and passengers, and handles and hauls the freight cars of the Boston & Main from Springvale to Sanford, serving all the various mills in the town.

Vast Power Development.

The Greatest Power Plant in America Completed at Sault Ste. Marie, Michigan.

After four years of work and at a cost of about $4,000,000, the Michigan Lake Superior Power Company has just completed its water power development at Sault Ste. Marie, Mich., by which, at the least calculation, 57,000 horse power will be produced. This development utilizes the waters of Lake Superior at the Falls of St. Mary's River, which have a descent of twenty feet. At these falls are located the cities of Sault Ste. Marie, Michigan, and Sault Ste. Marie, Ontario; here also are the large ship canals of the United States and Canadian governments, furnishing passage way around the falls for the vast lake commerce.

Lake Superior covers an area of some 30,000 square miles and is fed from a watershed many times that area, the St. Mary's River being its only outlet. The quantity of water fluctuates with the various conditions of precipitation and evaporation from about 3,600,000 to 7,000,000 cubic feet per minute, which rushing over the Soo Rapids represents an equivalent of from 130,000 to 260,000 horse power.

The power canal runs through the heart of the city of Sault Ste. Marie for a distance of about two and one-third miles, terminating at the great power house.

The water will flow 23 feet deep through the entire canal and when the full plant is running the velocity of the flow will be about four and one-half miles an hour, which will deliver approximately 30,000 cubic feet of water every second to the turbines, realizing under the flow which will remain available, about 60,000 horse power.

The power house is 1,368 feet long, 125 feet high and 100 feet wide. The substruction or pits, consists of 81 chambers, 100 feet long and 20 feet high, separated from each other by three feet of masonry walls. The penstock structure resting upon this pit structure also contains 81 chambers open on the upstream side, each 15 feet wide, 45 feet long and 20 feet high.

The downstream portion of the substructure not occupied by these penstocks is provided for the dynamos. The upper portion of the power house consists of two additional floors. The equipment consists of hydraulics and electric apparatus; each hydraulic unit is composed of four 33 inch New American turbines, arranged in two pairs on one shaft, each pair being housed in one case and discharging into one draught tube. Each hydraulic unit under normal conditions equals 568 horse power.

The Michigan Lake Superior Power Company will furnish power to industrial establishments. A portion of the power has already been sold to important industries. A graduated scale of prices for power has been made upon a basis of 24 hour service. These prices are very low.

Information as to factory sites, raw materials, transportation facilities, etc., furnished by M. A. Hays, Secretary of Chamber of Commerce, Sault Ste. Marie, Mich.

Infringement Suit.

The Willcox & Gibbs Sewing Machine Company has brought two patent infringement suits against the Wilkesbarre Lace Manufacturing Company, in the United States Circuit Court for the Middle District of Pennsylvania for an injunction and damages in connection with the alleged use by the Wilkesbarre company, of infringing machines made by the Industrial Manufacturing Company of Camden, New Jersey.

The patents involved in these suits are as follows: In the first suit, Overlock machine patents Nos. 472,094 and 472,095, dated April 5th, 1892, and in the second suit Overlock Corded Edge product patent 556,300, dated March 10, 1896, and Overlock Machine patent for making said corded edge No. 561,043, dated May 26, 1896. These patents are all owned and controlled by the Willcox & Gibbs Sewing Machine Co.

A suit against the Industrial Manufacturing Company on the two Overlock Machine patents first mentioned above was begun last December in the United States Circuit Court for the District of New Jersey.

—The Keystone Coal & Coke Co., of Greensburg, Pa., have contracted with Wm. B. Scaife & Sons Co., of Pittsburg, Pa., for a large filtering plant for their water works at Madison, Pa.

Among some of the other recent contracts taken by Wm. B. Scaife & Sons Co., for the Scaife and We-Fu-Go Water filtering systems, of which Wm. B. Scaife & Sons Co., of Pittsburg, Pa., are the sole manufacturers are the following: Union Steel Co., Donora, Pa., 500,000 gals.; The Lancaster Mills, Clinton, Mass., 1,000,000 gals.; W. D. Boyce Paper Co., Marcellus, Ill., 1,000,000 gals.; Thomas Phillips Co., Akron, O., 750,000 gals.; Gibson Mfg. Co., Concord, N. C., 125,000 gals.; Carroll Hotel, Vicksburg, Miss., complete filtering system; and others.

A Novel Legal Departure.

The trend of the times is toward consolidation and is noticeable in all trades, professions and industries.

The firm of Straley, Hasbrouck & Schloeder, counsellors at law, 257 Broadway, New York City, offers a good example of how this can work for the advantage of manufacturers, corporations and others in the matter of commercial law.

In connection with their extensive general law practice they established some years ago as an experiment a department devoted to the soliciting of patents for inventions, the registration of trade marks, etc., and litigation affecting same. The result has been so satisfactory that it has been decided to make the patent department a permanent feature.

To this end Messrs. Straley, Hasbrouck & Schloeder, have recently placed this branch of their business in the charge of Mr. C. Augustus Dieterich, counsellor at law and solicitor of patents, formerly of 229 Broadway, New York City, who will hereafter have full charge.

Mr. Dieterich comes from a family which has been identified with the patent practice for almost half a century and brings to his management an experience in this very important branch of commercial law of many years that cannot fail to work

to the great benefit of those who place their patent interests in his charge.

With their improved facilities Messrs. Straley, Hasbrouck & Schloeder are now in position and it is their aim and purpose to take complete charge of the legal business in all its phases, of large corporations, manufacturing concerns and individuals which business they are now obliged to entrust to different attorneys who are specialists in the particular branches to which the services may pertain.

With the means at their command a client may now concentrate his entire legal business in their office and they are prepared to render expert services in each branch.

The proposition is well worthy the careful consideration that the importance of the subject demands.

Union Button Sewing Machine Co. Trimmers.

Robert Mackinnon, Little Falls, N. Y., has recently given an order to the Union Button Sewing Machine Company for seventeen automatic trimmers to be put on his button sewing machines. These trimmers were selected after a thorough and impartial test which demonstrated once more the superiority of the Union Button Sewing Machine Co.'s trimmers as well as of the sewing machines themselves. The company is meeting with success in applying these trimmers to its old machines. They are as necessary to the machine as the button foot and soon save the cost of putting on.

The Pennypack Yarn Finishing Co. Makes Important New Connections in the Mercerizing Business.

Mr. Adolph Hoegger, chairman of the managing directors of the British Cotton & Wool Dyers' Association, just returned to England on October 3rd. Mr. Hoegger has entered into an arrangement for his association whereby the business of the Pennypack Yarn Finishing Co., of Holmesburg, Phila., Pa., will be handled under his supervision. The details, however, of the running of the business will be managed by Mr. John Kerr, of Kerr & Hoegger, Manchester, England, and Mr. J. C. Forrest, of Holmesburg, Pa.

Mr. Kerr is known in England as being one of the most expert dyers of mercerized yarn, and his reputation for fine results is known everywhere to the trade. This company will have the absolute use throughout the world, of the continuous process mercerizing machine, known as the Shuman machine, which is owned by Mr. Henry C. Forrest, the president of the Pennypack Yarn Finishing Co. The operation of this machine is a revelation as to what can be done in the mercerizing of skein yarn. In a recent test made on their small machine, a 120 lb. batch was turned out every 28 minutes, averaging 5 lbs. of yarn to 1 lb. of caustic and the labor of handling was done by four small boys. Mr. Hoegger's opinion is that the mercerizing of cotton yarn is at present in its infancy, and the low cost of the work will cause manufacturers to have yarn mercerized on account of the additional strength it receives, irrespective of luster or finish.

The company at Holmesburg have now under construction three large buildings to be used for bleaching, dyeing and winding in addition to the mercerizing of yarns.

These additions will make this one of the most complete plants in the country, and the work turned out on these machines heretofore described, will be of the finest quality and finish. The trade is invited to correspond with the Pennypack Yarn Finishing Co. for further information, which will be cheerfully given by the company.

Cafe Service on the New Jersey Central.

Arrangements have been perfected by the New Jersey Central for a Cafe service on several of its Philadelphia hourly trains. The trains leaving Foot of Liberty Street at 7.00 a.m., 1.00 p.m. and 6 p.m., will have this new Cafe equipment, and steaks, chops, broilers and hashed browned potatoes will be added to the a la carte Bill of Fare. The 8.00 a.m. and 12.00 m. and 5.00 p.m. trains from Philadelphia will have the same service and the details will be perfect in every respect.

Consolidation.

The business heretofore conducted by James Speed at 170 Summer St., and by Harry Stephenson, Jr., at 208 Summer St., has been consolidated, and hereafter will be conducted under the firm name of Speed & Stephenson, with main offices in the Wentworth Building, 170 Summer St., Boston, Mass. They will act as importers of a full line of machinery for the manufacture of woolen and worsted goods, and as selling agents for worsted yarns, tops, etc.

This combination places the new firm in a position to serve their customers with even more promptness and satisfaction than heretofore. Their combined lines of woolen and worsted machinery, etc., include the latest and most improved styles. The firms which they represent are: J. & T. Boyd, Ltd., Glasgow, Scotland, worsted spinning, twisting, etc.; John Perry, Ltd., Shipley, Eng., wool washing and combing machinery; Henry Hirst & Sons, Ltd., Gomersal, Leeds, Eng., woolen and worsted cards, mules, etc.; S. Haley & Sons, Ltd., Cleckheaton, Eng., card clothing of all descriptions; Heri Heaton & Sons, Liversedge, Eng., plain and grooved emery fillet, grinders, etc.; Bairstow Brothers, Halifax, Eng., caps, tubes, spindles and flyers; Thomas Turner, Son & Co., Bingley, Eng., apron and roller leathers, etc.

Storehouses have been opened in Lowell and Boston where parts of the machinery and all kinds of specialties in mill supplies are carried in stock. This enables prompt attention to the filling of orders.

Softening and Purifying Water.

Norman B. Livermore & Co., of 320 Sansome St., San Francisco, Cal., have been appointed sole agents for the Scaife and We-Fu-Go water softening and puri-

fying systems, for the Pacific Coast by Wm. P. Scaife & Sons Co., of Pittsburg, Pa., who are the sole manufacturers of these systems.

Norman B. Livermore, who organized the firm of Norman B. Livermore & Co., is an engineering graduate of Cornell University, who after a number of years in general practice, has recently organized this company to conduct a general engineering business, and to act as sales agent for special lines on the Pacific coast. This company will give the subject of water purification their special attention, and are abundantly able to furnish their clients with any details or information regarding either the Scaife or We-Fu-Go water softening and purifying systems.

American Underwriters' Fire Hose.

A large proportion of the mills throughout the country are insured in companies which come under the jurisdiction of the Associated Factory Mutual Fire Insurance Companies and the National Fire Protection Association, and are obliged to have fire hose that will meet the requirements of these two organizations. To supply this want the Boston Belting Company of Boston, Mass., manufacture what they call the American Underwriters Fire Hose, which is constructed to meet the requirements of the underwriters.

This fire hose is described in a pamphlet recently issued by the Boston Belting Company, in which first is mentioned the cotton fire hose adapted for outside use on portable hose reels and on the yard hydrants of factories. Next comes the underwriters linen fire hose. This is a reliable safeguard for inside use where it is necessary to hang fire hose up in warm rooms. It is light, compact and convenient and furnished in any length desired.

The pamphlet describes the underwriters coupling of the extension ring pattern, and an underwriter's play pipe, hydrant and hose house, recommended by the Associated Factory Mutual Fire Insurance Companies.

A copy of this leaflet should be in the hands of every manufacturer having property to be protected from fire.

Very Different.

Officers of the Alt. F. Clark Company, which conducts what is known as the Correspondence Institute of America, have been arrested by a United States Marshal on the charge of using United States mails for the purpose of defrauding. Their plan was to advertise in various periodicals to furnish free tuition in the branches of study in which they give instruction, the understanding being that the students need not pay until he or she had secured a position paying, at least, $13 a week. It is alleged that $15 was then requested by the institution for tools, supplies, etc., before the student could take up course of study. In return for the $15, an outfit was sent which had an intrinsic value of no more than $1. This company was organized at Scranton several years after the success of the International Correspondence Schools of that city had become so marked. The latter institution has no connection with the Clark Company, and should not be confounded with it or its methods. The Correspondence Institute of America advertised to give instruction in newspaper, magazine and commercial illustrating, proofreading, bookkeeping, stenography, etc.

Removal.

Messrs. Bosson & Lane, manufacturers, importers and dealers in dyestuffs, chemicals, etc., have removed their main office to their new works at Atlantic, a suburb of Boston, and their future address will be Atlantic, Mass. Telephone, Dorchester 2.

Atlantic City a Pleasant Fall Resort.

SOCIAL LIFE STILL A FEATURE.

In many ways Atlantic City is the most novel place in the world. Even though it is a shore resort its season is twelve months long and at all seasons there is something doing. The great hotels, and there are many of them, are open all the year and the service is fine at all times.

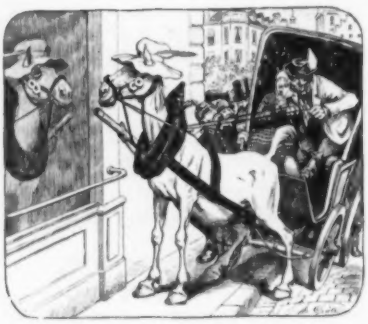
Atlantic City is a city in every sense of the word, and every convenience is afforded, including golf, driving, theatres and similar diversions.

It is a particularly healthful place and the autumn months at Atlantic City are always charming. The famous promenade, the board walk, is ever interesting and no better season can be selected for visiting this famous watering place. The New Jersey Central operates 3-hour trains to Atlantic City from New York at 9.40 a.m. and 3.40 p.m. These trains are models in every respect, and the arrival at Atlantic City is in time for luncheon and dinner. The route is by far the shortest from New York and the General Passenger Agent of the New Jersey Central, New York, has prepared an illustrated booklet on Atlantic City which upon application will be sent to any address.

—The engineering department of the Pittsburgh Gage & Supply Company, Pittsburgh, Pa., has been unusually rushed with work during the past few days. Recent orders are for one 150 h. p. boiler for the Lincoln Fire Brick Co., Bolivar, Pa., plant, one 150 h. p. boiler for the American Porcelain Co., New Brighton, Pa., plant, one 150 h. p. boiler for the Keystone Mining Co., at Leadville, Colo., and one 25 h. p. automatic engine for the Clearfield Steam Laundry Co., Clearfield, Pa.

The Atlas Portland Cement Company, of Northampton, Pa., have recently placed an order with the Burt Manufacturing Company, of Akron, Ohio, for six Cross oil filters, making 16 of these filters in use in their different plants. Other recent orders reported by the Burt Company were from the following concerns: The Allis-Chalmers Company, Swift & Company, American Sheet Steel Company, West Virginia Pulp & Paper Company, American Locomotive Company, Savannah Electric Company, and Armour & Company.

IN AND OUT OF THE MILL.



Policeman. "Hi, there! This isn't a blacksmith shop. What are you driving on the sidewalk for?"

Driver. "By George! Ever since I bought that sunshade for me hoss, I can't get him by the show-windows."

Nothing Astonishing.

"I wish to buy a pair of checked bathing trunks," said the freckled fanatic.

"Checked trunks!" exclaimed the clerk.

"Why, certainly," responded the fanatic. "Didn't you ever hear of people having their trunks checked?"—From the Indianapolis Sun.

Preliminary.

The policeman heard high words and poked his head in the door.

"What's goin' on here?" he demanded.

"Nawthin'! Nawthin' at all!" answered one of the belligerent men in the middle of the floor. "There's nawthin' goin' on, but there's a fight comin' off in less than a minute if ye'll only keep movin'."—Chicago Post.

Slighted.

The hen sobbed—I do feel slighted. In fables the horse, and the dog, and even the goose have important parts, while I am only a lay figure.—From the Detroit Free Press.

Ought to Be Familiar.

The veteran always maintains his dignity; both the white veteran and the black veteran. In the mountains of New Hampshire I met one of the colored troops, who was still fighting nobly, driving a stage on a country route; and said to him: "What is your name?" Said he: "George Washington, sah!" I said: "That is a name that is well known to everybody in this country." Said he: "I reckon, sah, it ought to be. I's been drivin' heah eber since de wah!"—Horace Porter in Brown Book.

Lesser of Two Evils.

Caller—Why do you permit your office boy to smoke cigarettes all the time?

Lawyer—O, he can't whistle when he's smoking.—Stray Stories.

Explained.

"If that's my grandfather speaking," said the man who had paid his coin, "there must be something wrong, for I can't understand him."

"He's speaking in Latin, you know," said the medium. "I'll have to translate it for you."

"But he never spoke a word of Latin in his life."

"Perhaps not, but he's dead now, and Latin is one of the dead languages."—From the Philadelphia Press.

Faint Heart.

"I can never marry you," said the beautiful blonde.

"But," pleaded the wealthy old man, "won't you make my life happy for the short years I will be here? I am troubled with a weak and faint heart."

"In that case I accept you."

And yet they say faint heart never won fair lady.—From the Chicago News.

The Retort Courteous.

A Scotch girl, rosy cheeked and demure, was in one corner of a compartment in a continental train. In the corner opposite sat a heavy German. The Scotch girl was reading in the Bible. The German noticed the fact. After looking the girl over critically he asked her whether she actually believed all she found in the Bible.

"Aye," answered she, raising her eyes to him from the page.

"Not the story of Adam and Eve?"

"Aye."

"And of Cain and Abel?"

"Aye."

"But certainly you don't believe the story of Jonah and the whale?"

The girl said she believed that, too. The German was puzzled.

"But how are you going to prove it? Ask Jonah when you get to heaven?"

The idea struck the girl as a good one, and she said she could prove it that way.

"Suppose he isn't there? What then? How would you prove it?"

"Ah," said the demure maiden, "then you ask him."—From the New York Evening Sun.

Just Like Being in the Country.

"I hear New York has mosquitoes this summer."

"How nice. Now we'll have no further need of going to the country."

The Effect.

When your horse runs away, there you are; but when your automobile explodes, where are you?—Boston Globe.

The ancient answer never wears out, and it fits the automobile as well as the steamship: "All depends on what kind of a life you have led."—Boston Daily Advertiser.

Strong Inducement.

The sister—I have become engaged to Fred.

The brother—Whatever induced you to do that?

The sister—Why, Fred, of course.—Stray Stories.

A Horrible Example.

He used to make, his day's work o'er,
For home a bee-line straight.
But as his family's at the shore—
He comes home now quite late.
—Philadelphia Press.

Not So Bad As That.

"Johnny, Johnny, are you smoking the nasty little things again? I thought you had sworn off!"

"No'm. I never swear. All I said was that I'd be doggoned if I ever smoked 'em again."—From the Chicago Tribune.

Wise Wife.

He—Mrs. Wise seems to understand how to manage her husband pretty well.

She—Yes. She lets him have her own way in everything.—Life.

A man and a strange umbrella often go without saying.

There is always room at the top—but in case of fire it is better to be at the bottom.

"The man who trusts another educates him," says a writer. If he keeps right on trusting he will also add to his own stock of knowledge.—From the Chicago News.

Funny Signs of the Times.

Some persons find as much fun in reading signboards as others do in reading the comic papers. Here are a few oddities reported by observing travelers, the first of which, evidently, was displayed in front of a butcher's shop:

"I kill myself every Tuesday and Friday."

"Take notis when this board is out of site the river is dangrous."

"Widow with large family wants washing by the week."

"Ladies and gents sold and healed."

"This is the old shop just come from above."

"A large stock of ladies' hose, pure cashmere, to be cleared 25 cents the pair. They won't last long at this price."

"Abominable belts made to order."

"Sailor's vitals cooked here."

"Why go further and be gulled elsewhere? Step inside."—New York Press.

A Thin Cat.

The skeleton of a cat walked into a butcher shop. Ryan, seeing her, bawled out, "Mickey, didn't oi tell ye a month ago to fade that cat wid a pound of mate a day until ye had her fat?" "You did! An' oi'm just after fading her wid a pound." "Has that cat ate a pound this mornin'?" "Yes, sir." "Sure, oi think it's a lie ye're tellin'. Bring me thim scales. Now bring me that cat." The cat turned the scale at exactly one pound. "There, didn't oi tell ye that she'd eaten a pound of mate this mornin'?" "All right, me boy; there's the pound of mate; but where the divil's the cat?"—Brown Book.

Many Dogs Are.

"That's a nice-looking dog," remarked the kindly old gentleman who takes an interest in everything.

"Yes, sir; he looks all right," replied the seedy individual who was leading him with a piece of rope.

"He looks like a pointer."

"Yes, sir; that's what he looks like. But that ain't what he is. He's a disappointer."—Globe.

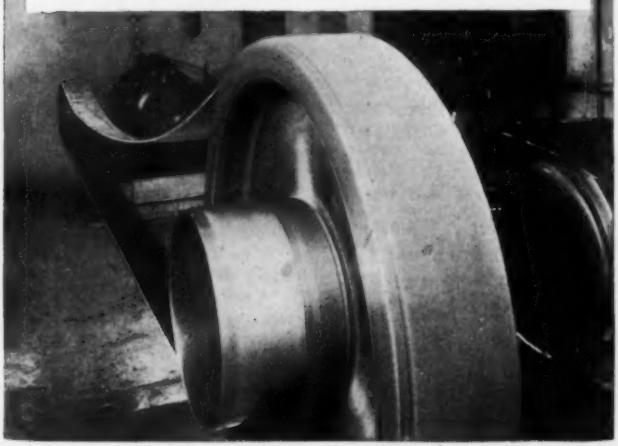
WHAT'S THE FRICTION LOAD IN A MILL WHOSE BELTS RUN THIS WAY?

TIGHTENING STRAIN ALL GONE. JOURNAL FRICTION CUT IN TWO.

CLING-SURFACE LETS ANY BELT RUN EASY. THIS BELT REPRESENTS 6 YEARS USE BUT RAN THUS AFTER FIRST WEEK. ASK US.

CLING-SURFACE MFG. CO.,
199-205 Virginia St., Buffalo, N. Y.

BOSTON NEW YORK PHILADELPHIA



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Schools,
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AND ALL INDUSTRIAL BUILDINGS.

Impure Air, Smoke, Steam and Gases Rapidly and Constantly Removed.

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Buffalo, N. Y.

BUYERS' INDEX.

Advertisers whose names do not appear under desired headings will please notify the publishers. Such omissions are accidental, not intentional.

Alphabetical Index to Advertisements follows this Classified List.

Air Moistening System.
American Moistening Co., 150 Devonshire St., Boston.

Architects and Mill Engineers.
Ferguson, John W., Paterson, N. J.
Gray, Arthur F., Exchange Bldg., Boston.
Green, Samuel M., Holyoke, Mass.
Suck, Adolph, 179 Summer St., Boston.

Attorney-at-Law.
Dawson, H. Horace, 309 Mutual Life Bldg., Philadelphia, Pa.

Automatic Feeds for Cotton and Wool.
Atlas Foundry & Mch. Co., Newark, N. J.
Harwood, Geo. S. & Son, 53 State St., Boston.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila., Pa.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.
Smith, Jas. Woolen Machinery Co., Phila.

Baling Machine.
Torrance Mfg Co, 18 Davis St., E. Newark, N. J.

Bandings.
See under Yarns.

Bands and Labels.
Docker-Foster Co., Phila., Pa.

Baskets.
Ballou Basket Works, Belding, Mich.
Crane Bros., Westfield, Mass.
Lane, W. T. & Bro., Port Chester, N. Y.

Belting.
Alexander Bros., 410 No. 3d St., Phila., Pa.
Boston Belting Co., Boston, Mass.
Dodge Mfg. Co., Mishawaka, Ind.
Graton & Knight Mfg. Co., Worcester, Mass
Houghton, E. F. & Co., 3rd and Somerset Sts., Phila.
Jeffrey Manufacturing Co., Columbus, Ohio.
Keystone Leather Belting Works, Norristown, Pa.
Main Belting Co, 1219 Carpenter St, Phila.
Popham, Henry, & Son, Newark, New Jersey.
Shultz Belting Co., St. Louis, Mo.
Smith, Jas. Woolen Mach. Co., Phila, Pa.
See also Mill Supplies

Belt Dressing.
Alexander Bros, 410 No. 3d St, Phila, Pa.
Cling Surface Mfg. Co., 168 Virginia St., Buffalo, N. Y.
Keystone Leather Belting Works, Norristown, Pa.
Stephenson Mfg. Co., Albany, N. Y.

Belt Hooks.
Bristol Co., Waterbury, Ct.

Bindings
See Tapes and Braids.

Bleaching Materials.
Bosson & Lane, Boston.
Roessler & Hasslacher Chemical Co, 100 William St, New York.

Block Cutting for Printing.
Atlas Copper Stamp Works, 15 Whitehall St., New York.

Blowers, and Blower Systems.
American Blower Co., Detroit, Mich.
Boston Blower Co., Hyde Park, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Mass. Fan Co., Waltham, Mass.
Sturtevant, B. F. Co., Boston, Mass.

Bobbins, Spools, Shuttles, Etc.
McGuire, John A, Co, Claremont, N. H.
Southern Bobbin Co., Greensboro, N. C.
Sweet & Doyle, Cohoes, N. Y.
Tebbets, E. L., & Co., Locke's Mill, Me.

Boilers.
See Steam Boilers.

Boiler Compounds.
International Boiler Compound Co., 48 Market St., Chicago, Ill.

Boxes, Cloth Boards, Etc.
Pearson, J. T, Kensington, Pa.

Boxes Paper.
See Paper Boxes.

Braiding Machinery.
New England Butt Co., Providence, R. I
Textile Machine Works, Reading, Pa.

Braids.
See Tapes, Braids and Edgings.

Brass (Perforated.)
See under Perforated Metal.

Brushes.
Felton, S. A. & Son Co., Manchester, N. H.
Parks & Woolson Mach. Co., Springfield Vt.

Brushers
See Napping Machines.

Burr Pickers.
Atlas Foundry & Mch. Co., Newark, N. J.
Curtis & Marble Machine Co., Worcester, Mass.
Sargent's, C. G., Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.

Calico Printers' Machinery and Supplies.
Arlington Machine Works, (Arthur Birch) Arlington Heights, Mass.
Birch Brothers (Albert Birch), Somerville, Mass.
Butterworth, H. W., Sons & Co., Philadelphia.
Taunton New Bedford Copper Co., New Bedford, Mass.
Textile Finishing Mach'y Co., 17 Exchange Pl., Providence, R. I.
See also Dyeing, Bleeching Machinery, etc

Canvas Baskets.
Ballou Basket Works, Belding, Mich.
Lane, W. T. & Bro., Port Chester, N. Y.

Carbonizing.
Riverdale Woolen Co., Northbridge, Mass.

Carbonizing Machinery.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts, Phila.
Sargent's, C. G. Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.

Card Clothing.
Ashworth, Elijah, Fall River, Mass.
Booth, Benj. & Co., Philadelphia.
Edma Card Clothing Co, 422 S. 5th St, Camden, N. J.
Leigh, Evan A, 35 Mason Building, Boston

Card Feeds
See Automatic Feeds.

Card Grinding Machinery.
Smith, Jas. Woolen Machinery Co., Phila.

Carders' Tools.
Brown, W. H, Mechanic St, Worcester Mass.

Carpet Machinery.
Altemus, Jacob K., 2816 N. 4th St, Phila, Pa.
Curtis & Marble Machine Co, Worcester, Ms.
Howard, Geo. C., Lansdowne, Pa. and 2123 Market St., Philadelphia, Pa.
Parks & Woolson Mach. Co., Springfield, Vt.
Smith, Jas. Woolen Machinery Co., Phila.

Castings.
Livermore, Homer F., 85 Pearl St., Boston.

Chemicals and Apparatus.
Fiedt, Geo. D. & Co, 528 Arch St, Phila, Pa.
Roessler & Hasslacher Chemical Co, 100 William St, New York.

Chemist.
Austen, Peter T., 80 Broad St., New York.

Cling Surface.
Cling Surface Mfg. Co., Buffalo, N. Y.

Clocks.
Howard, E. Clock Co., 403 Washington St., Boston, Mass., 41 Maiden Lane, New York.
Riggs & Brothers, 310 Market St. Philadelphia, Pa.

Cloth Boards.
Chaffee Bros., Oxford, Mass.

Clutches.
American Tool & Machine Co., Boston, Mass.
Dodge Mfg. Co., Mishawaka, Ind.
Eastern Machinery Co., The, New Haven, Conn.
Hunter, James, Machine Co., North Adams, Mass.
Smith, Jas. Woolen Machinery Co., Phila.

Combs (Wool and Cotton).
Crabb, William, & Co, Newark, N. J.
Townsend, Thomas, 157 Orange St., Providence, R. I.

Conveying Machinery and Chains.
Jeffrey Manufacturing Co., Columbus, O.

Cop Tubes.
See Paper Tubes.

Copper Gaskets.
U. S. Mineral Wool Co., 141 Liberty St., New York.

Copper (Perforated.)
See under Perforated Metal.

Copper Print Rollers.
Taunton-New Bedford Copper Co., New Bedford, Mass.

Copper Work for Dyers.
Butterworth, H. W. & Sons Co., Philadelphia.
Textile Finishing Mach'y Co., 17 Exchange Pl., Providence, R. I.

Cotton.
Blaisdell, Jr., Co., S., Chicopee, Mass.
Charles, W. B., Amsterdam, N. Y.

Cotton Bale Ties.
DeHaven Mfg. Co., 50 Columbia Heights, Brooklyn, N. Y.

Cotton Elevators.
Buffalo Forge Co., Buffalo, N. Y.

Cotton Machinery.
Altemus, Jacob K., 2816 N. 4th St, Phila., Pa.
Ashworth, Elijah, Fall River, Mass.
Barber & Colman, 11 Pemberton Sq., Boston.
Brownell, G. L., Worcester, Mass.
Butterworth, H. W. & Sons Co., Philadelphia.
Curtis & Marble Machine Co, Worcester, Mass.
Draper Company, Hopedale, Mass.
Easton-Burnham Co., Pawtucket, R. I.
Fairmount Machine Co, 22d and Wood Sts, Philadelphia.
Houghton, L. T., Worcester, Mass.
Howard & Bullough American Machine Co, Pawtucket, R. I.
Kilburn, Lincoln & Co, Fall River, Mass.
Kitson Machine Co., Lowell, Mass.
Leigh, Evan A, 35 Mason Building, Boston.
Lever, Oswald, Lehigh Ave. and Masher St., Philadelphia.
Lowe, Stephen C., 136 Devonshire St., Boston, Agt. John Hetherington & Sons, Ltd.
Lowell Machine Shop. Lowell, Mass.
Mason Machine Works, Taunton, Mass.
McKerrow, H. G, Boston, Mass.
Parks & Woolson Mach. Co., Springfield, Vt.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia, Pa.
Philadelphia Textile Machinery Co, Hancock and Somerset Sts, Philadelphia, Pa.
Saco & Pettee Machine Shops, Newton, Upper Falls, Mass.
Schofield, Geo. L., Philadelphia.
Smith, Jas., Woolen Machinery Co., Phila.
Whitin Machinery Wks, Whitinsville, Mass.

Cotton Openers and Lappers.
Howard & Bullough American Machine Co, Pawtucket, R. I.
Kitson Machine Co., Lowell, Mass.

Cotton Softeners.
Bosson & Lane, Boston, Mass.

Cotton Waste.
Blaisdell, Jr., Co., S., Chicopee, Mass.
Charles, W. B., Amsterdam, N. Y.

Credits.
National Mercantile Agency, New York and Boston.

Cutters for Knit Fabrics.
Kennedy, Thos. (Cutters, etc.,) Cohoes, N. Y.

Dating and Time Stamps.
Riggs & Brothers, 310 Market St., Philadelphia, Pa.

Dextrine.
Elwell, Henry A. & Co., Philadelphia, Pa.
Stein, Hirsh & Co, 165 Duane St., New York.

Dryers.
American Blower Co., Detroit.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Brothers (Albert Birch), Somerville, Mass.
Boston Blower Co., Hyde Park, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Butterworth, H. W. & Sons Co., Philadelphia.
Hunter, Jas., Machine Co., No. Adams Mass.
Kenyon, D. R. & Son., Raritan, N. J.
Mass. Fan Co., Waltham, Mass.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia.
Philadelphia Textile Machinery Co, Philadelphia, Pa.
Sargent's, C. G., Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.
Sturtevant, B. F. Co., 34 Oliver St., Boston, Mass.
Textile Finishing Mach'y Co., 17 Exchange Pl., Providence, R. I.

Dusters.
See Wool and Waste Dusters.

Dust Collectors.
Allington & Curtis Mfg. Co., Saginaw, Mich.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.

Dyers, Bleachers and Finishers.
Brophy's, T, Sons, Jasper St, Philadelphia
Conoes Dye Works, Cohoes, N. Y.
Cranston Worsted Mills (yarns), Bristol, R. I.
Davidson & Brooke, 2560 No. 3rd St., Philadelphia.
Duncan & Baillie, Cohoes, N. Y.
Firth & Foster Co., Kensington, Pa.
Greenwood, R. & Bault, Frankford, Pa.
Home Bleach & Dye Works, Pawtucket and Valley Falls, R. I.
Howard & Co., Rahway, N. J.
Ingrahamville Dye Works, Pawtucket, R. I.
Kagermann, Edward, 1210 Orianna St., Phila.
Lawrence Dye Works Co., Lawrence, Mass.
Lorimers, The Wm. H. & Sons Co., Phila.
Molt Bros., Millbury, Mass. (Indigo Blue.)
Pawtucket Dyeing & Bleaching Co. Pawtucket, R. I.
Pennypack Yarn Finishing Co., Holmesburg Pa.
Providence Mills Mfg. Co., 55 Girard Ave., Philadelphia, Pa.
Rowland, Samuel, Schuylkill Haven, Pa.
Scranton Yarn Finishing Co., Scranton, Pa.
Whittier Mills, Chattahoochee, Ga., Treasurer's Office, Springfield, Mass.

Dyeing, Drying, Bleaching and Finishing Machinery.
American Blower Co., Detroit.
Antisdel, E. M., 12 Miller St., Utica, N. Y., (Knit Dryer.)
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Bros. (Albert Birch), Somerville, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Butterworth, H. W. & Sons Co Phila Pa.
Curtis & Marble Machine Co, Worcester, Mass.
Delahunty Dyeing Machine Co., Pittston, Pa.
Dubois, A. N., 2170 Sedgeley Ave., Phila.
Fairmount Machine Co, 22 and Wood Sts, Philadelphia.

Howard, Geo. C., Lansdowne, Pa. and 2123 Market St, Philadelphia, Pa.
Kenyon, D. R. & Son, Raritan, N. J.
Klauder-Weldon Dyeing Machine Co., Amsterdam, N. Y.
Parks & Woolson Machine Co., Springfield, Vt.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia, Pa.
Philadelphia Textile Machinery Co, Hancock and Somerset Sts, Philadelphia, Pa.
Philadelphia Textile Specialty Co., 500 North 12th St., Phila.
Smith, Jas. Woolen Machinery Co., Phila.
Sturtevant, B. F. Co, 34 Oliver St, Boston, Mass. (Drying.)
Textile Finishing Mach'y Co., 17 Exchange Pl., Providence, R. I.

Dye House Cans.
Hill, James Mfg. Co., Providence, R. I.

Dye Sticks.
Bailey, Frank, Cedar Brook, New Jersey.
Haedrich, E. M., Philadelphia, Pa.

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Atteaux, F. E. & Co., 174-176 Purchase St., Boston.
Baily-Rodgers Co., 34 Moore St., New York.
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Bischoff, & Co, 84 Park Place, N. Y.
Bosson & Lane, 36 Central Wharf, Boston.
Corey, S. J, 273 Congress St, Boston
Cassella Color Co., 182 Front St., New York.
Dillon & Co. 20 Cedar St, New York.
Dubois, A. N., 2170 Sedgelev Ave., Phila.
Elwell, Henry A. & Co., Philadelphia, Pa.
Farbenfabriken of Elberfeld Co, 40 Stone St, N. Y.
Ford, J. B. Co., Wyandotte, Mich.
Fortner, L. B., 36 Strawberry St., Phila.
Geisenheimer & Co, 189 Front St, New York.
Holliday & Sons, Ltd., Read, 7 Platt St., New York.
Johnson, Chas. A. & Co, 22 Dey St, N. Y
Keller, John J, & Co, 104-106 Murray St, N. Y.
Koechl, Victor, & Co. 122 Hudson St, N. Y.
Kuttroff, Pickhardt & Co., New York.
Molt Bros., Millbury, Mass. (Indigo Blue.)
N. Y. & Boston Dyewood Co, 55 Beekman St, New York.
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Sharpless Dye Wood Ext. Co, The Bourse, Phila, Pa.
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Thayer, Ed. M., 106 Broad St., Boston, Mass.
Vila, H. S., 115 So. 2nd St., Philadelphia, Pa

Dynamos and Motors.
General Electric Co., 44 Broad St., New York
New England Machine Co., Pawtucket, R. I.
Sturtevant, Co., B. F. Boston.

Edgings.
See Tapes, Braids and Edgings.

Electrical Construction.
General Electric Co., 44 Broad St., New York.
New England Machine Co., Pawtucket, R.I.

Electric Fans.
American Blower Co., Detroit.
Buffalo Forge Co., Buffalo, N. Y.
General Electric Co., 44 Broad St., New York.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila., Pa
Sturtevant Co., B. F., Boston.

Electric Lighting.
General Electric Co., 44 Broad St., New York.
New England Machine Co., Pawtucket, R. I.

Electric Motors.
General Electric Co., 44 Broad St., New York.
Sturtevant Co., B. F., Boston.

Electrotyping and Printing.
Whitcomb, H. C, & Co, Boston.

Elevators.
Cohoes Foundry & Machine Co, Cohoes, N.Y.
Eastern Machinery Co, The New Haven, Conn.
Jeffrey Manufacturing Co., Columbus, O.
Howard, Geo. C., Lansdowne, Pa and 2123 Market St, Philadelphia, Pa.
Salem Elevator Works, Salem, Mass.

Employers Time Recorders.
Riggs & Brothers, 310 Market St., Philadelphia, Pa.

Engine Stop.
Locke Regulator Co., Salem, Mass.

Exhaust Heads.
Burt Manufacturing Co, Akron, Ohio.
Pittsburgh Gage & Supply Co., Pittsburgh, Pa.
Sturtevant, B. F. Co., Boston, Mass.

Fans—Exhaust and Ventilating.
See Ventilating Apparatus.

Feed Water Heaters.
Green Fuel Economizer Co., Matteawan N. Y.
Scaife, W. B. & Sons, Pittsburg, Pa.

Feed Water Pumps.
Goulds Mfg. Co, Seneca Falls, N. Y.
Pittsburgh Gage & Supply Co., Pittsburgh, Pa
Scaife, W. B. & Sons, Pittsburg, Pa.

Feeds.
See Automatic Feeds.

Filters.
Automatic Water Purifying Co, 45 Broadway, N. Y.
Pittsburgh Gage & Supply Co., Pittsburgh, Pa.
Scaife, W. B. & Sons. Pittsburg, Pa.

Finishing Machinery.
See Dyeing, Drying, Bleaching and Finishing.

Fluted Rolls.
Cohoes Foundry & Machine Co., Cohoes, N.Y
Thurston, A. G & Son, Box 528, Fall River, Mass.

Forges.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant Co., B. F., Boston.

Friction Clutches.
See Clutches.

Friction Hoisting Drums.
Eastern Machinery Co., New Haven, Conn.

Fuel Economizers.
Green Fuel Economizer Co., Matteawan, N. Y.

Fulling Mills for Woolen Goods.
Hunt, Rodney, Machine Co, Orange, Mass.
Hunter Jas, Machine Co, No. Adams, Mass.
Kenyon, D. R. & Son, Raritan, N. J.

Garnetts.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.
Smith, Jas. Woolen Machinery Co., Phila.

Gas Engines.
Jones, Lewis, 60½ and Media Sts, Phila, Pa.

Gas Exhausters.
Sturtevant Co., B. F., Boston.

Gauges
Pittsburgh Gage & Supply Co., Pittsburgh, Pa.

Gears.
New Process Raw Hide Co., Syracuse, N. Y.

Gear Cutting Machine.
Whiton, The D. E, Co, New London, Conn.

Generating Sets.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant Co., B. F., Boston.

Heating.
See Ventilating.

Heddles.
Watson, L. S. Mfg. Co, Leicester, Mass.

Hoisting Machinery.
The Eastern Machinery Co., New Haven, Conn.

Hose.
Boston Belting Co., Boston.

Hosiery Labels.
Docker, Foster Co., Philadelphia, Pa.
Saranac Electrical Mfg. Co., St. Joseph, Mich.

Hosiery Boards.
Pearson, J. T, Kensington, Pa.

Humidifying Apparatus.
American Air Moistening Co., Boston.
Hydro Extractors.
American Tool & Machine Co., Boston.
Textile Finishing Mach'y Co., 17 Exchange Pl., Providence, R. I.
Ironing Machines for Knit Goods.
Craw, J. W. Laundry Machinery Co., So. Norwalk, Conn
Jacquard Cards.
Rogers, H. E, South Manchester, Conn.
Knit Goods Edgings, Trimmings, etc.
Cathcart, John & Co., 115 Franklin St., New York.
Chapin, Geo. W. Philadelphia, Pa.
Charles, W, B., Amsterdam, N. Y.
Cheney Bros, Silk Goods, 479 Broome St, N. Y.
Friedberger Mfg Co, Edgings, Germantown, Phila, Pa.
Hepner & Horwitz, Lacings, 30 Howard St, N. Y.
Krout & Fite Mfg. Co, Allegheny Ave. and Emerald St., Phila.
Weimar Bros, 1817 East York St, Phila. Pa.
Knit Goods Finishing Machines, Crochet, Etc.
Arnold Sewing Machine Co., 216 High St, Newark, N. J.
Craw, J. W. Laundry Machinery Co., So. Norwalk, Conn.
Merrow Machine Co, The, Hartford, Conn.
Nye & Tredick Co., 606 Arch St, Phila, Pa.
Scott & Williams, 2079 E. Cumberland St, Phila Pa.
Willcox & Gibbs Sewing Mch. Co., New York.
Knitting Machine Cylinders.
Paxton & O'Neill, 129 Bread St, Phila, Pa.
Stafford & Holt, Little Falls, N. Y.
Knitting Machinery.
Adams Rib and Top Cutting Mch Co., Norristown, Pa.
American Knitting Machine Co., 6th and Arch St., Philadelphia, Pa.
Antisdel, E. M., 12 Miller St., Utica, N Y.
Babcock Machine Works, Fort Plain, N. Y.
Branson Machine Co., 506 N. American St., Philadelphia.
Brinton, H. & Co., 213 Race St., Philadelphia, Pa.
Cooper, Chas, Bennington, Vt.
Crane Mfg. Co, Lakeport, N. H.
Dresdner Strickmaschinenfabrik, Irmscher & Co. Dresden-Lobtau, Germany.
Excelsior Knitting Machine Manufacturing Co., Allentown, Pa.
Jenckes, E. Mfg. Co, Pawtucket, R. I.
Jones, Lewis, 60 1-2 and Media Sts, Philadelphia, Pa.
Kennedy, Thos. (Cutters, etc.), Cohoes, N. Y
Keystone Knitting Machine Mfg. Co., 40 N 7th St., Phila.
Lamb Knitting Mach. Mfg. Co., Chicopee Falls, Mass.
Leighton Machine Co, Manchester, N. H.
Ludwig, E. H, Hawley, Pa.
Mayo Knitting Machine & Needle Co, Franklin, N. H.
McMichael & Wildman Mfg. Co, Norristown, Pa.
Mueller, Arthur, 760 Lexington Avenue., Brooklyn, N. Y.
Nye & Tredick Co., 606 Arch St, Phila, Pa.
Paxton & O'Neill, 127 Bread St, Phila, Pa.
Pepper Mch. Works, Lakeport, N. H.
Ruth & Co., Norristown, Pa.
Scott & Williams, 2079 E. Cumberland St., Phila., Pa.
Snyder, Homer P. Mfg. Co., Little Falls, N. Y.
Stafford & Holt, Little Falls, N. Y.
Taylor, James, 835 Arch St., Philadelphia.
Tompkins Bros., Troy, N. Y.
Knitting Needles and Supplies.
Breedon's, Wm, Son, Amsterdam, N. Y.
Brinton, H. & Co., 213 Race St., Philadelphia, Pa.
Cooper, Chas, Bennington, Vt.
Corey, Wm, Co, Manchester, N. H.
Crane Mfg. Co, Lakeport, N. H.
Dodge Needle Co., Manchester, N. H.
Ives, Loyal T, New Brunswick, N. J.
Keystone Knitting Machine Mfg. Co., 40 N 7th St., Philadelphia.
Lamb Knitting Machine Mfg. Co., Chicopee Falls, Mass.
Manufacturers' Supplies Co., 66 No. 4th St. Philadelphia.
Mayo Knitting Machine & Needle Co Franklin, N. H.
Page Needle Co, Chicopee Falls, Mass.
Treat, Orion, Manchester Green, Conn.
Wardwell Needle Co. Lakeport, N. H.
Knotter for Spoolers.
Barber & Colman, 11 Pemberton Sq., Boston
Labeling Machine.
Saranac Electrical Mfg. Co., St. Joseph, Mich.
Laboratory Outfits.
Feidt, Geo. D. & Co, 528 Arch St. Phila, Pa.
Leather.
Houghton, E. F. & Co., 3rd and Somerset Sts., Phila.
Leather Boards.
Rogers, H. E, South Manchester, Conn.
Looms.
Draper Company, Hopedale, Mass.
Fairmount Machine Works, 22d and Wood Sts. Philadelphia.
Howard, Geo. C., Lansdowne, Pa. and 212 Market St, Philadelphia, Pa. (For wire.)
Kilburn, Lincoln & Co, Fall River, Mass.
Leigh, Evan A., 35 Mason Bldg., Boston.
Lowell Machine Shop, Lowell, Mass.
Mason Machine Works, Taunton, Mass.
Smith, Jas. Woolen Machinery Co., Phila.
Whitin Machine Works, Whitinsville, Ms,
Loopers.
Beattie's Machine Works, Cohoes, N. Y.
Lubricators.
Dixon, Jos., Crucible Co, Jersey City, N. J.
Pittsburgh Gage & Supply Co., Pittsburgh Pa.
Lug Straps.
Black Diamond Lug Strap Co., 1850 Perkiomen Ave., Reading, Pa.
Lumber.
Stearns, A. T, Lumber Co, Neponset, Mass.
Lumpers.
Gerry, George, & Son, Athol, Mass.
Machinery Dealers.
Jefferson, Ed, & Bro, 127 South 2d St., Phila, Pa.
Pittsburgh Gage & Supply Co., Pittsburgh, Pa.
Schofield, Geo. L. Phila., Pa.
Taylor, James, 835 Arch St., Philadelphia
Machinists.
New England Machine Co., Pawtucket, R. I.
Machinists' Tools.
Dodge Mfg. Co., Mishawaka, Ind.
Whiton, The D. E. Co, New London, Conn.
Mails.
Walder, J, Paterson, N. J
Measuring and Folding Machines.
Curtis & Marble Machine Co, Worcester, Ms.
Elliott & Hall, 54½ Hermon St. Worcester Mass.
Parks & Woolson Mach. Co., Springfield Vt.
Mechanical Draft.
American Blower Co., Detroit.
Boston Blower Co., Hyde Park, Mass.
Buffalo Forge Co, Buffalo., N. Y.
Sturtevant, B. F. Co., Boston, Mass.
Mechanical Engineers.
American Blower Co., Detroit, Mich.
Buffalo Forge Co., Buffalo, N. Y.
Green, Samuel M., Holyoke, Mass.
Sturtevant Co., B. F., Boston.
Suck, Adolph, 179 Summer St., Boston.
Mercerizing Machinery.
Butterworth, H. W. & Sons, Philadelphia.
Klauder-Weldon Dyeing Machine Co., Amsterdam, N. Y.
Philadelphia Textile Specialty Co., 500 North 12th St., Phila.
Textile Finishing Mach'y Co., 17 Exchange Pl., Providence, R. I.

Mill Architects.
See Architects & Mill Engineers.
Mill Baskets.
Crane Bros., Westfield, Mass.
Lane, W. T. & Bro , Port Chester, N. Y.
Mill Brushes.
See Brushes.
Mill Builders and Engineers.
Ferguson, John W., Paterson, N. J.
Mill Sewing Machines.
(See Sewing Machines and Supplies.)
Mill Supplies.
American Supply Co, Providence, R. I.
Bamford & Smith, Pascoag, R. I.
Bristol, The, Co., Waterbury, Conn
Buckley's, Benj. Son, Gun Mill, Paterson, N. J.
Chase Pulley Co., Providence, R. I.
Dixon Lubricating Saddle Co., Bristol, R.I
Dodge Mfg. Co., Mishawaka, Ind.
Easton-Burnham Co., Pawtucket, R. I.
Houghton, E. F. & Co., 3rd and Somerset Sts , Phila.
Jefferson, Ed, & Bro, 127 South 2d St., Phila, Pa.
Jeffrey Manufacturing Co., Columbus, O.
Keystone Leather Belting Works, Norristown, Pa.
Lane, W. T. & Bro., Port Chester, N. Y.
Main Belting Co, 1219 Carpenter St, Phila.
Oil Seeds Pressing Co., 15-25 Whitehall St., New York.
Pittsburgh Gage & Supply Co., Pittsburgh, Pa.
Shaw, Victor, Ring Traveller Co., Providence, R. I.
Smith, Jas. Woolen Machinery Co., Phila.
Southern Bobbin Co., Greensboro, N. C.
Stephenson Mfg. Co., Albany, N. Y.
Sweet & Doyle, Cohoes, N. Y
Thurston, A. G, & Son, Fall River, Mass.
Watson, L. S, Mfg.Co, Leicester, Mass.
Napping Machines.
Columbia Napping Machine Co., Somerville, Mass.
Curtis & Marble Machine Co, Worcester, Mass.
Jones, Lewis, 60 1-2 and Media Sts., Philadelphia, Pa.
Parks & Woolson Mach. Co., Springfield, Vt.
Noils (Silk.)
Kyle, Wm. & Co., 54 Howard St., N. Y.
Malcolm Mills Co., Frankford, Pa.
Oil Cups.
Pittsburgh Gage & Supply Co., Pittsburgh, Pa.
Oil Filters.
Burt Manufacturing Co., Akron, Ohio.
Houghton, E. F. & Co., 3rd and Somerset Sts., Phila.
Pittsburgh Gage & Supply Co., Pittsburgh, Pa.
Oils.
Houghton, E. F. & Co., 3rd and Somerset Sts., Phila.
Oil Seeds Pressing Co., 15-25 Whitehall St. New York.
Stephenson Mfg Co., Albany, N. Y.
Oilless Bearings.
Arguto Oilless Bearing Co, Wayne Junction, Phila.
Overseaming Machines.
Arnold Sewing Machine Co., 216 High St., Newark, N. J.
Merrow Machine Co., Hartford, Conn.
Union Special Sewing Machine Co., 75 Kinzie St., Chicago, Ill
Willcox & Gibbs Sewing Machine Co., New York.
Oxidizing Machinery.
Dubois, A. N., 2170 Sedgeley Ave., Phila.
Packing.
Boston Belting Co , Boston.
Jenkins Bros., New York.
Paint.
F. E. Hook, 29-44 Hook Bldg., Hudson, Mich
Painting Machines.
F. E. Hook, 29 44 Hook Bldg , Hudson, Mich.
Pantagraphs for Mill Engraving.
Johnson, C. A, & Co, 22 Dey St, New York.
Paper Box Machinery.
Samuel M. Langston, 701 Locust St., Phila., Pa.
Paper Tubes.
Sayford Paper Specialty Co., Camden, N. J.
Patent Solicitors.
Crosby & Gregory, 24 School St, Boston.
Siggers, E. G., Washington, D. C.
Straley, Hasbrouck & Schloeder, 257 Broadway, New York.
Perforated Metals.
Beckley, A. J. & Co., 248 Pearl St., New York.
Peroxide of Sodium.
Roessler & Hasslacher Chemical Co., 100 William St, New York.
Picker Sticks.
Southern Bobbin Co., Greensboro, N. C.
Pipe Covering.
Keasbey, R. A, 83 Warren St, New York.
Pneumatic Conveying.
See Ventilating.
Power Transmitting Machinery.
Arguto Oilless Bearing Co, Wayne Junction, Phila.
Chase Pulley Co., Providence, R. I.
Dodge Mfg. Co., Mishawaka, Ind.
Eastern Machinery Co, New Haven, Conn.
Fairmount Machine Works, 23d and Wood Sts, Philadelphia.
Howard, Geo. C., Lansdowne, Pa. and 2133 Market St , Philadelphia, Pa.
Hunter, Jas, Machine Co, No. Adams, Mass.
Jeffrey Manufacturing Co., Columbus, O.
Kilburn, Lincoln & Co, Fall River, Mass.
Pittsburgh Gage & Supply Co., Pittsburgh, Pa.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila.
Saginaw Manufacturing Co., Saginaw, Mich.
Smith, Jas. Woolen Machinery Co., Phila.
Textile Finishing Mach'y Co., 17 Exchange Pl., Providence, R. I.
Preparatory Machinery, (Cotton).
Atherton, A. T., Mach. Co., Pawtucket, R. I.
Howard & Bullough Am. Machine Co., Pawtucket, R. I.
Kitson Machine Co., Lowell, Mass.
Saco & Pettee Machine Shops, Newton Upper Falls, Mass.
Press Boards and Fenders.
Rogers Paper Mfg, Co., Inc., South Manchester, Conn.
Presses.
Boomer & Boschert Press Co., 338 West Water St., Syracuse, N. Y.
Butterworth, H. W. & Sons Co., Philadelphia.
Curtis & Marble Machine Co, Worcester, Ms
Hart, Charles, Frankford, Philadelphia.
Howard, Geo C., Lansdowne, Pa and 2133 Market St. Philadelphia, Pa.
Spence & Rideout, Nashua, N. H.
(Power, Screw, Hydraulic, Hollow Steam Plate).
Textile Finishing Mach'y Co., 17 Exchange Pl., Providence, R. I.
Pulleys.
See Power Transmitting Machinery.
Pumps.
Goulds Mfg. Co, Seneca Falls, N. Y.
Textile Finishing Mach'y Co., 17 Exchange Pl , Providence, R. I.
Purifying & Filtration Plants.
Scaife, W. B. & Sons, Pittsburg, Pa.
Rag Pickers.
Smith, Jas. Woolen Mach. Co., Phila, Pa.
Raw Hide Gears.
New Process Raw Hide Co. Syracuse, N. Y
Reed and Harness Manufacturers.
American Supply Co, Providence, R. I.
Walder, J, Paterson, N. J.
Remnants.
Feingold, H. & D., 91 Bedford St., Boston.
Ribbons.
Cheney Bros, S. Manchester, Ct.
Ring Travellers.
DeHaven Mfg. Co , 50 Columbia Heights, Brooklyn, N. Y.

National Ring Traveller Co., Providence, R. I.
Shaw, Victor, Ring Traveller Co., Providence, R. I.

Rope Transmission.
Dodge Mfg. Co., Mishawaka, Ind.

Roving Cans.
Hill, James Mfg. Co., Providence, R. I.
N. E. Ventilating & Heating Co, 930 Manton Ave, Providence, R. I.
Laminar Fibre Co., No. Cambridge, Mass.
Walrus Fibre Mfg. Co., Medford, Mass.

Rubber Covered Rollers and Goods.
Boston Belting Co., Boston.

Saddles and Stirrups.
Dixon Lubricating Saddle Co., Bristol, R. I

Scales
Sweet & Doyle, Cohoes, N. Y.

Scallop Machines.
Merrow Machine Co., Hartford, Conn.

Schools.
American School at the Armour Institute of Tecnology, Chicago, Ill.
International Correspondence Schools, Scranton, Pa.
Lowell Textile School, Lowell, Mass.
New Bedford Textile School, New Bedford, Mass.
Philadelphia Textile School, Phila, Pa.

Sewing Machines and Supplies
Arnold Sewing Machine Co., 216 High St,. Newark, N. J.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Bros. (Albert Birch), Somerville, Mass.
Curtis & Marble Machine Co, Worcester, Mass.
Dinsmore Mfg. Co., Salem, Mass.
Fales, L. F., Walpole, Mass.
Manufacturers' Supplies Co., 66 No. 4th St., Philadelphia.
Textile Finishing Mach'y Co , 17 Exchange Pl., Providence, R. I.
Union Button Sewing Mch. Co., 164 High St., Boston.
Union Special Sewing Machine Co., 75 Kinzie St., Chicago, Ill.
Willcox & Gibbs S. M. Co., New York.

Shafting Hangers, Etc.
See Power Transmission Machinery.

Shearing Machinery.
See Dyeing, Drying, Bleaching and Finishing.

Shell Rolls.
Cohoes Foundry & Mach. Co. Cohoes, N. Y
Thurston, A. G, & Son, Box 528, Fall River, Mass.

Shoddies.
See Wool Shoddies.

Shuttles.
See Bobbins, Spools, Shuttles, Etc.

Shuttle Checks.
Victor Shuttle Check Co., Auburn, N. Y.

Silk Machinery.
Butterworth, H. W. Sons Co, Philadelphia.
Mason Machine Works, Taunton. Mass.
Textile Finishing Mach'y Co., 17 Exchange Pl., Providence, R. I.

Singe Plates.
Butterworth, H. W. Sons Co., Philadelphia.

Screens (Perforated.)
See under Perforated Metal.

Selling Agents.
See Commission Merchants.

Separators.
Draper Co., The, Hopedale, Mass.
Ring Frame Thread Protector Co., The Amsterdam, N. Y.
Taunton-New Bedford Copper Co., New Bedford, Mass.

Singeing Machines.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Bros. (Albert Birch). Somerville. Mass.
Butterworth, H. W. Sons Co., Philadelphia.
Curtis & Marble Machine Co, Worcester, Ma.
Textile Finishing Mach'y Co., 17 Exchange Pl., Providence, R. I.

Sizing, Starch and Gums.
Arabol Mfg. Co., 155 William St., New York.
Elwell, Henry A. & Co., Philadelphia, Pa.
O. K. Soap Co., 968 Franklin St., Phila.
Stein, Hirsch & Co, 165 Duane St, New York.

Skylights.
Drouve Co., G., Bridgeport, Conn.

Slashers.
Cohoes F'ndry & Machine Co, Cohoes, N. Y
Lowell Machine Shop, Lowell, Mass.

Soaps.
Elwell, Henry A. & Co., Philadelphia, Pa.
India Alkali Works, Boston, Mass.
O. K. Soap Co., 968 Franklin St., Phila.

Spindles.
Bamford & Smith, Pascoag, R. I.
Buckley, Benj's, Sons, Gun Mill, Paterson, N. J.
Draper Company, Hopedale, Mass.
Easton-Burnham Co., Pawtucket, R. I.
Ward & Vandergrift, Elmer, N. J.
Whitin Machine Wks, Whitinsville, Mass.

Spindle Tubes.
Bamford & Smith, Pascoag, R. I.

Spinning Cylinders.
N. E. Ventilating & Heating Co, 930 Manton Ave, Providence, R. I.

Spinning Frames.
See Cotton Machinery.

Spinning Rings.
Draper Company, Hopedale, Mass
Whitinsville Spinning Ring Co, Whitinsville, Mass.

Spinning Tubes.
Buckley, Benj's. Son, Gun Mill, Paterson, N. J.

Spools. *See Bobbins, Spools Shuttles, Etc.*

Spooler Knotter.
Barber & Colman, 11 Pemberton Sq., Boston.

Stamps for Hosiery.
Atlas Copper Stamp Works, 15 Whitehall St., N. Y.
Wells, Wilfred, 505 W. Lehigh Ave., Phila.

Steam Boilers.
Brown, C. H, & Co, Fitchburg, Mass.

Steam Boiler Insurance.
Hartford Steam Boiler Inspection & Insurance Co, Hartford, Conn.

Steam Engines.
American Blower Co., Detroit, Mich.
Brown, C. H, & Co, Fitchburg, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Hooven (The), Owens & Rentschler Co Hamilton, O.
Sturtevant, B. F. & Co., Boston.
Textile Finishing Mach'y Co., 17 Exchange Pl., Providence, R. I.

Steam Surface Coverings.
Keasbey, Robert A., New York.

Steam Specialties.
Butterworth, H. W. Sons Co., Philadelphia.
Houghton, E. F. & Co., 3rd and Somerset Sts., Phila.
Jenkins Bros., New York.
Locke Regulator Co., Salem, Mass.
New York Lubricating Oil Co., 35 Water St., New York.
Pittsburgh Gage & Supply Co., Pittsburgh, Pa.
Sturtevant Co., B F., Boston.
Textile Finishing Mach'y Co., 17 Exchange Pl., Providence, R. I.

Steam Valves.
Jenkins Bros., New York.

Stop Motion for Looms.
See, Warp Stop Motions.

Tanks, Tubs and Vats.
Davis, G. M. & Son, Palatka, Fla.
Cypress Lumber Co, Apalachicola, Fla.
Lewis, H. F. & Co., New Orleans, La.
Stearns, A. T. Lumber Co, Neponset, Mass.
Stevens, D. B. & Co., Auburn, Me.
Textile Finishing Mach'y Co., 17 Exchange Pl., Providence, R. I.
Woolford, George, 2340 No. 9th St, Phila, Pa.

Tapes, Braids and Edgings.
Cathcart, John, & Co, 115 Franklin St, N. Y
Chapin, Geo W Philadelphia Pa.
Friedberger Mfg. Co, Germantown, Pa.

Hamilton, J. H. & Co., 84 Franklin St., N. Y.
Krout & Fite Mfg. Co., Allegheny Ave. and Emerald st., Philadelphia.
Weimar Bros, 1317 East York St, Phila, Pa.

Temples.
Draper Co., Hopedale, Mass.

Tension Pulleys.
Arguto Oilless Bearing Co, Wayne Junction, Phila.
N. E. Ventilating & Heating Co, 980 Manton Ave, Providence, R. I.

Tentering Machines.
See Dyeing, Bleaching Machinery, Etc.

Tenter Clips.
See Dyeing, Drying, Bleaching and Finishing Machinery.

Testing Machines.
Howard, Geo. C., Lansdowne, Pa. and 2123 Market St., Philadelphia, Pa.

Textile Schools.
See Schools.

Thread Board for Spinning & Twisting Frames.
Houghton, L. T. Worcester, Mass.

Tickets and Labels.
Saranac Electrical Mfg. Co., St. Joseph, Mich.

Tower Clocks.
Howard E. Clock Co., 403 Washington St., Boston; 41 Maiden Lane, New York.

Trucks.
Slingsby H. C., 253 Broadway, New York.

Turbine Governors.
Replogle Governor Works, Akron, O.

Turbines.
(See Water Wheels.)

Twine Machinery.
Brownell, G. L., Worcester, Mass.

Twisting Machinery.
Brownell, G. L., Worcester, Mass.
Bullock, Mach Co., O. S., 179 Broadway, Cambridgeport, Mass.

Valves.
Boston Belting Co., Boston, Mass.
Locke Regulator Co., Salem, Mass.

Ventilating Apparatus.
Allington & Curtis Mfg. Co, Saginaw, Mich., 81 Wareham St., Boston.
American Air Moistening Co., Boston
American Blower Co., Detroit, Mich.
Berry, A. Hun, 23 W. 1st St, Boston, Mass.
Boston Blower Co., Hyde Park, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Drouve Co., G., Bridgeport, Conn.
Massachusetts Fan Co., Waltham, Mass.
New England Ventilating & Heating Co, Providence, R. I.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia.
Philadelphia Textile Machinery Co, Hancock St, above Lehigh Ave, Phila, Pa.
Sargent's, C. G., Sons, Graniteville, Mass.
The Sterling Blower & Pipe Mfg. Co., 44 Huyshope St, Hartford, Conn.
Sturtevant, B. F. Co, 34 Oliver St, Boston, Mass.

Warp Stop Motions.
Draper Co., Hopedale, Mass.

Washers (Cloth).
Arlington Machine Works, (Arthur Birch) Arlington Heights, Mass.
Birch Brothers (Albert Birch), Somerville, Mass
Butterworth, H. W. & Sons Co., Philadel
Hunt, Rodney, Machine Co, Orange, Mass.
Hunter, Jas, Machine Co, No. Adams, Mass.
Kenyon, D. R., & Son, Raritan, N. J.
Rusden Machine Co, Warren. R. I.

Washing Soda.
Ford, J. B. Co., Wyandotte, Mich.

Watchman's Clocks.
Eco Magneto Clock Co, 620 Atlantic Ave, Boston.
Howard, E Clock Co., 403 Washington St., Boston, Mass., 41 Maiden Lane, New York.
Nanz & Co, 127 Duane St., New York.
Riggs & Brothers, 310 Market St., Philadelphia, Pa.

Water Purifiers & Filters.
Automatic Water Purifying Co., 45 Broadway, N. Y.
Scaife, W. B. & Sons, Pittsburg, Pa.

Water Wheels.
Hunt, Rodney, Machine Co, Orange, Mass.
Leffel, James, & Co, Springfield, O.

Water Wheel Governors.
Cohoes Foundry & Machine Co, Cohoes, N. Y.
Leffel, James & Co, Springfield, Ohio.
Replogle Governor Works, Broadway and Chestnut Sts., Akron, Ohio.

Whitewashing Machines.
F. E. Hook, 29-44 Hook Bldg., Hudson, Mich.

Winders. (Back.)
Taylor, Jas., 835 Arch St., Philadelphia.

Winder Bobbins.
Sweet & Doyle, Cohoes, N. Y.

Winders. (Hosiery.)
Altemus, Jacob K., Philadelphia.
Foster Machine Co., Westfield, Mass.
Lever, Oswald, Lehigh Ave. and Mascher St., Philadelphia.
Snyder, Homer P. Mfg. Co., Little Falls, N. Y.
Universal Winding Co, 95 South Street, Boston.

Wood Pulleys.
Chase Pulley Co., Providence, R. I.
Dodge Mfg. Co., Mishawaka, Ind.
Pittsburgh Gage & Supply Co., Pittsburgh, Pa.
Saginaw Manufacturing Co, Saginaw, Mich.

Wool Cleaning Compound.
Ford, J. B. Co., Wyandotte, Mich.
India Alkali Works, Boston.

Wool Combing Machinery.
Leigh, Evan A. 35 Mason Bldg., Boston.

Wool and Waste Dusters.
Atlas Foundry and Mch. Co., Newark, N. J.
Gerry, Geo. & Son, Athol, Mass.
Sargents', C. G., Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.
Stillman, Victor C., Westerly, R. I.

Woolen and Worsted Machinery.
Altemus, Jacob K., 2816 N. 4th St, Phila, Pa.
American Tool and Machine Co., Boston.
Arguto Oilless Bearing Co, Wayne Junction, Phila
Arlington Mch. Works (Arthur Birch), Arlington Heights, Mass.
Atlas Foundry and Mch Wks., Newark, N.J.
Birch Brothers (Albert Birch), Somerville, Mass.
Butterworth, H. W. Sons Co., Philadelphia.
Curtis & Marble Machine Co, Worcester, Mass.
Fales, L. F, Walpole, Mass.
Fairmount Machine Works, 22d and Wood Sts, Philadelphia.
Furbush, M. A. & Son Machine Co, Phila, Pa.
Harwood, Geo. S. & Son, 53 State St., Boston.
Howard, Geo. C., Lansdowne, Pa. and 2123 Market St., Philadelphia, Pa.
Hunt, Rodney, Machine Co, Orange, Mass.
Hunter, Jas, Machine Co. No. Adams, Mass.
Jefferson, Ed. & Bro, 127 South Second St., Phila, Pa.
Kensington Machine Works, Mascher St., below Lehigh Ave., Phila.
Kenyon D. R. & Son, Raritan, N. J.
Leigh, Evan A. 35 Mason Bldg, Boston.
Lever, Oswald, Lehigh Ave. and Mascher St., Philadelphia, Pa.
Lowe, Stephen C., 186 Devonshire St., Boston. Agt. John Hetherington & Sons, Ltd.
Parks & Woolson Machine Co., Springfield, Vt.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Philadelphia.
Sargent's, C. G., Sons, Graniteville, Mass.
Schofield, Geo. L., Philadelphia.
Smith, Jas. Woolen Machinery Co., Phila.
Textile Finishing Mach'y Co., 17 Exchange Pl., Providence, R. I.

Wool Oiling Apparatus.
Harwood, Geo. S. & Son, 53 State St., Boston.

Wool Shoddies.
Riverdale Woolen Co, Northbridge, Mass.
Slack, Wm. H. B., & Bro, Springfield, Vt.

Wool Washing, Preparing and Drying Machinery.

Hunter, Jas. Machine Co., No. Adams, Mass.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.
Sargent's, C. G. Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.

YARNS, THREADS, ETC.

Banding.

Moore, C. & Co. 12 S. 5th St, Phila, Pa.
Tucker & Cook Mfg. Co, Conway, Mass.
Toohey, M. J. & Co., Fall River, Mass.
Whittier Mills, Chattahoochee, Ga., Treasurer's Office, Springfield, Mass.

Cotton Yarns.

American Cotton Yarn Exchange, 67 Chauncy St., Boston.
Ballou Yarn Co., Providence, R. I.
Blythe, Richard A., 114 Chestnut St., Phila.
Buckingham Paulson Co., 83 Leonard St. New York.
Catlin & Co, New York, Boston, Phila. and Chicago.
Chapin, Geo. W., 229 Church St., Phila., Pa.
Charles, W. B., Amsterdam, N. Y.
Dana Warp Mills, Westbrook. Me.
Dexter Yarn Co., Pawtucket, R. I.
Dodds, J. S., 517 Wool Exchange, New York.
Eddy & Street, Providence, R. I.
Spring St., N. Y.
Eichmann & Sternberg, New York.
Grant Yarn Co, Fitchburg, Mass.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
Indian Orchard Co., Indian Orchard, Mass.
Jenckes, E., Mfg. Co., Pawtucket, R. I.
Mitchell, Jas. E. & Co, Boston and Phila. Pa.
Moeller & Littauer, 109 Greene St, New York.
Montgomery, J. R, Co, Windsor Locks, Ct.
Monument Mills, Housatonic, Mass.
Morgan, E. A., 54 Franklin St., N. Y.
Orswell Mills, Fitchburg, Mass.
Salkeld, A. D. & Bro., 66 Leonard St., N. Y.
Tucker & Cook Mfg. Co, Conway, Mass.
Whittier Mills, Chattaeoochee, Ga., Treas. Office, Springfield, Mass.

Cotton Warps.

New England Warp Co., New Haven, Conn.

Cotton Yarns Wool Spun.

Broadbent, J. & Sons, Unionville, Conn.

Flax. Hemp. Jute and Ramie.

Fawcett, Hughes, 115 Franklin St., N. Y
Eichmann & Sternberg, 530 Broadway, N. Y.
Morgan, E. A., 54 Franklin St., N. Y.

Gassed Yarns.

Ballou Yarn Co., Providence, R. I.
Dodds, J. S., 517 Wool Exchange, New York.
Eichmann & Sternberg, New York.
Greene & Daniels Mfg. Co, Pawtucket, R. I.

Glazed Yarns.

Ballou Yarn Co., Providence R. I.
Blythe, Richard A., 114 Chestnut St., Phila.
Chapin, Geo. W., 229 Church St, Phila., Pa.
Eichmann & Sternberg, 530 Broadway, N. Y.
Indian Orchard Co., Indian Orchard, Mass.
Lorimers, Wm. H. & Sons Co., Philadelphia.
Malcolm Mills Co, Frankford, Pa.
Orswell Mills, Fitchburg, Mass.
Rockwell, E. M., Leominster, Mass.
Salkeld, A. D. & Bro., 66 Leonard St., N. Y
Skerry, A. T. & Co, 47 Leonard St., N. Y.
Walcott & Campbell Spinning Co, New York Mills, Oneida Co. N. Y.
Whittier Mills, Chattahoochee, Ga., Treasurer's Office, Springfield, Mass.

Harness Twine.

Ballou Yarn Co., Providence, R. I.
Cranston Worsted Mills, Bristol, R. I.
Eichmann & Sternberg, 530 Broadway, N. Y.
Fawcett, Hughes, 115 Franklin St., N. Y.
Moore, C., & Co., (S. W. cor. 5th and Market Sts.)
Morgan, E. A., 54 Franklin St., N. Y.
Whittier Mills, Chattahoochee, Ga., Treasurer's Office, Springfield. Mass.

Hosiery and Knitting Yarns.

Blythe, Richard A., 114 Chestnut St., Phila
Boyer, B. F. Co., Camden, N. J.
Broadbent, J. & Sons, Unionville, Conn.
Cranston Worsted Mills, Bristol, R. I.
Chapin, Geo. W., 229 Church St., Phila., Pa
Dexter Yarn Co., Pawtucket, R. I.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
Herbst, Albert & Co., E. Allegheny Ave., Philadelphia.
Hyde, E. S, 223 Chestnut St, Phila, Pa.
Jenckes, E., Manufacturing Co, Pawtucket, R. I.
Mitchell, James E, & Co, Phila. and Boston
Monument Mills, Housatonic Mass.
Moeller & Littauer, 109 Greene St, New York.
Queensbury Mills, Worcester, Mass.
Skerry, A. T. & Co., 47 Leonard St., N. Y.

Mercerized Yarns.

Blythe, Richard A. 114 Chestnut St., Phila.
Dodds, J. S., 517 Wool Exchange, New York.
Eichmann & Sternberg, 530 Broadway, N. Y.
Harper, E. J., 395 Broadway, New York.
Indian Orchard Co., Indian Orchard, Mass.
Lorimer, Wm. H. & Sons Co, Philadelphia.
Montgomery, J. R. & Co., Windsor Locks. Conn.
Morgan, E. A., 54 Franklin St., N. Y.
Pennypack Yarn Finishing Co., Holmesburg, Pa.

Mohair Yarns.

Cranston Worsted Mills, Bristol, R. I.
Montgomery & Co. J. R, Windsor Locks. Ct.
Morgan, E. A., 54 Franklin St., N. Y.

Novelty Yarns, Tinsels, Silk Noils, Etc.

Cranston Worsted Mills, Bristol, R. I
Eichmann & Sternberg, 530 Broadway, N.Y.
Indian Orchard Co., Indian Orchard, Mass.
Malcolm Mills Co, 220 Chestnut St, Phila, Pa.
Moeller & Littauer, 109 Greene St., New York.
Montgomery & Co, J. R, Windsor Locks, Ct.
Skerry, A. T, & Co, 47 Leonard, St, N. Y.

Silk Yarns.

Chapin, Geo. W., 229 Church St., Phila., Pa.
Cheney Bros, S. Manchester and Hartford Ct.
Eddy & Street, Providence, R. I.
Eichmann & Sternberg, 530 Broadway, N Y.
Moeller & Littauer, 109 Greene St., New York.
Ryle. Wm, & Co, 54 Howard St, N. Y.

Woolen and Merino Yarns.

Boyer, B. F. Co., Camden, N. J.
Broadbent, J. & Sons, Unionville, Conn.
Eaton Rapids Woolen Mills, Eaton Rapids, Mich.
Eddy & Street, Providence, R. I.
Harper, E. J., 395 Broadway, New York.
Hyde, E. S, 223 Chestnut St, Phila, Pa.
Jenckes, E. Mfg. Co., Pawtucket, R. I.
Moeller & Littauer, 109 Greene St., New York.
Rockwell, E. M, Leominster, Mass.
Salkeld, A. D. & Bro., 66 Leonard St., N. Y
Skerry, A. T. & Co, 47 Leonard St, N. Y.
Solis, Andrew J, Jr, & Co, 179 Devonshire St, Boston, Mass.
Speed & Stephenson, 170 Summer St, Boston.

Worsted Yarns.

Alleghany Worsted Mills, Phila, Pa.
Boyer, B. F. Co, Camden, N. J.
Campion, Richard, 17 Bank St., Phila.
Cranston Worsted Mills, Bristol, R. I.
Croft, Howland, & Sons, cor. Broadway and Jefferson Ave., Camden, N. J.
Harper, E. G., 395 Broadway, New York.
Herbst, Albert, & Co., E. Allegheny Ave., Philadelphia.
Moeller & Littauer, 109 Greene St., New York.
Pocasset Worsted Co., Thornton, R. I.
Queensbury Mills, Worcester, Mass.
Salkeld, A. D. & Bro., 66 Leonard St., N. Y
Skerry, A. T. & Co, 47 Leonard St, N. Y.
Speed & Stephenson, 170 Summer St., Boston

Alphabetical Index to Advertisements.

page

Adams Rib and Top Cutting Mach. Co., 1026
Alexander Bros., 863
Allegheny Worsted Mills, 996
Allen-Hussey Co. 856
Allington & Curtis . Outside Back Cover
Altemus, Jacob K. 859
American Blower Co., 1039
American Cotton Yarn Exchange, 988
American Knitting Machine Co., 1024
American Moistening Co. 994
American School of Armour Inst. Tech., 984
American Supply Co., 848
American Tool and Machine Company 1015
Antisdel, E. M. 1034
Arabol Mfg. Co., The 1013
Arlington Mach. Works (Arthur Birch), 1013
Arguto Oilless Bearing Co. 855
Arnold Sewing Machine Co., 1032
Ashworth, Elijah, 851
Atlas Stamp Works 1008
Atlas Foundry & Mch. Co., 850
Atteaux, F. E. & Co. 1010
Austen, Dr. Peter T. 978
Automatic Water Purifying Co., 864
Babcock Machine Works, 1036
Bailey, Frank 859
Baily-Rodgers Co., Ltd. 1012
Ballou Basket Works, 856
Ballou Yarn Co., 992
Bamford & Smith, 1018
Barber & Colman 842
Beattie, Wm. & Son 1036
Beckley, A. J., Co., 1012
Berlin Aniline Works, 1009
Berry, A. Hun, 1017
Birch Bros. (Albert Birch) 849 1014
Bischoff, C., & Co., 1011
Black Diamond Lug Strap Co., 986
Blaisdell, Jr., Co., The S. 1002
Blythe, R. A. 993
Boomer & Boschert Press Co. 990
Booth, Benj. Co. 891
Bosson & Lane, 867-1011
Boston Belting Co., 845
Boston Blower Co., 1038
Boyer, B. F, Co, 996
Branson Machine Co, 1027
Breedon's Son, Wm., 1037
Brinton, H., & Co. 1029
Bristol Co., The . Outside Back Cover
Broadbent, J. & Sons, 999
Brophy's, T, Sons 1005
Brown, C. H, & Co. Outside Back Cover
Brown, W. H, 852
Brownell, G. L., 846
Buckingham, Paulson & Co., 993
Buckley's Benj., Son, 856
Buffalo Forge Co. 968
Burt Mfg. Co. 854
Butterworth H. W. & Sons Co., 833
Campion, Richard, 999
Cassella Color Company 1008
Cathcart, John & Co. 1029
Catlin & Co, 995
Chaffee Brothers Company, 858
Chapin, Geo. W., 989
Charles, William B. 995-1002
Chase Pulley Co., 846
Cheney Bros, 998
Cling Surface Mfg. Co. 968
Cohoes Foundry & Machine Co., —
Columbia Napping Machine Co. 1018
Cooper, Chas, 1036
Corey, S. J., 1010
Corey, Wm., Co., 1037
Crabb, Edw, & Co, 861
Crane Bros. 1034
Crane Mfg. Co., 1034
Cranston Worsted Mills, 996
Craw, J. W. Laundry Mchy. Co., 1034
Croft, Howland, Sons & Co, 996
Crosby & Gregory, 871
Curtis & Marble Machine Co., 1018
Cypress Lumber Co, 1016
Dana Warp Mills 994
Davidson & Brooke 1005
Davis, Geo. M. & Sons, 1016
Dawson, H. Horace 980
De Haven Mfg. Co., . Outside Back Cover
Delaunty Dyeing Mch. Co. 1015
Dexter Yarn Co., 999

page

Dillon & Co, 1010
Dinsmore Mfg. Co., 854
Dixon, Jos., Crucible Co., 1014
Dixon Lubricating Saddle Co. 848
Docker-Foster Co. 1036
Dodds, J. S. 993
Dodge Manufacturing Co. 847
Dodge Needle Co. 1028
Draper Company 835
Dresdner Strickmaschinen-Fabrik, 1030
Drouve, The G., Co., 1004
Dubois, A. N. 1013
Duncan & Baillie, 1004
Eastern Machinery Co. 862
Easton-Burnham Co., 990
Eaton Rapids Woolen Mills, 999
Eco Magneto Clock Co. 861
Eddy & Street, 993
Edma Card Clothing Co. 851
Eichmann & Sternberg, 995
Elliot & Hall, 858
Elwell, Henry A. & Co., 980
Excelsior Knitting Machine Mfg. Co, 1028
Fairmount Machine Co, 845
Fales, L. F., 857
Farbenfabriken of Elberfeld Company, 1008
Fawcett, Hughes, 993
Feingold, H. & D., 1000
Felton, S. A. & Son Co., 858
Ferguson, John W., 988
Firth & Foster Co 1006
Ford, J. B., Co., 853
Fortner, L. B. 1012
Foster Machine Co. 1040
Friedberger Mfg. Co. 1023
Furbush, M. A. & Son Machine Co. 872
Geisenheimer & Co. Outside Back Cover
General Electric Co., 862
Gerry, Geo. & Son, —
Goulds Mfg. Co. —
Grant Yarn Co., 995
Graton & Knight Mfg. Co., 849
Gray, Arthur F. 988
Green Fuel Economizer Co. 850
Green, Samuel M., 988
Greene & Daniels Mfg. Co., 992
Greenwood, R., & Bault, 1004
Haedrich E. M. 1012
Hamilton & Co., J. H. 989
Harper, E. G., 993
Hart, Chas. 980
Hartford Steam Boiler Inspection & Insurance Co., 1017
Harwood & Son, Geo. S. 872
Hays, M. A. 979
Hepner & Horwitz, 1029
Hill, James Mfg Co., 857
Home Bleach & Dye Works, 1006
Hook, F. E., 860
Hooven, Owens & Rentschler Co, 980
Houghton, E. F. & Co., 860
Houghton, L. T., 864
Howard & Co., 1005
Howard, E. Clock Co. 861
Howard Foundry and Machine Wks., 1013-1034
Howard & Bullough Am. Machine Co., 837
Hunt, Rodney, Machine Co, 1021
Hunter, Jas, Machine Co, 1020
Hyde, Edward S., 980
India Alkali Works, 996
Indian Orchard Co. 994
Ingrahamville Dye Works 1006
International Boiler Compound Co., 858
International Correspondence Schools, 985
Ives, Loyal T. 1037
Jefferson, Edw, & Bro., 980
Jeffrey Mfg. Co. 845
Jenckes, E., Mfg. Co., 995-1024
Jenkins Bros., Outside Back Cover.
Johnson, Chas. A., & Co., 1012
Jones, Lewis 1030
Kagermann, Edward, 1005
Keasbey, Robert A. Outside Back Cover.
Keller, John J., & Co., 1009
Kennedy, Thos, 1027
Kensington Machine Works, 845
Kenyon, D. R. & Son, 1019
Keystone Knitting Machine Mfg. Co. 1037
Keystone Leather Belting Wks. 863
Kilburn, Lincoln & Co., 848
Kitson Machine Co. 839

	page
Klauder-Weldon Dyeing Machine Co.	1014
Klipstein, A, & Co.,	1009
Koechl, Victor, & Co.	1007
Krout & Fite Mfg. Co.,	987
Kuttroff, Pickhardt & Co.	870
Lamb Knitting Machine Co.	1034
Laminar Fibre Co.,	857
Lane, W. T. & Bro.,	858
Langston, Samuel M.,	867
Lawrence Dye Works Co.	1006
Leffel, James, & Co,	1038
Leigh, Evan Arthur,	848
Leighton Mch. Co.,	—
Lever, Oswald	844
Lewis, H. F. & Co., Ltd.,	1013
Livermore, Homer F.,	858
Lloyd, Wm. S.,	797
Locke Regulator Co.	1039
Lorimer's, Wm. H. Sons Co.,	1004
Lowe, S. C.,	842
Lowell Machine Shop,	834
Lowell Textile School,	—
Ludwig, E. H.,	1020
Main Belting Co.	863
Malcolm Mills Co.,	996
Manufacturers' Supplies Co.	1037
Mason Machine Wks.,	836
Massachusetts Fan Co.,	1016
Mayo Knitting Machine & Needle Co,	1037
McGuire, John A., Co.	851
McKerrow, H. G.	840
McMichael & Wildman Mfg. Co,	1026
Merrow Machine Co.,	1031
Mitchell Jas. E., & Co.,	993
Moeller & Littauer	993
Molt Bros.	1010
Montgomery, J. R., Co.,	992
Monument Mills,	992
Moore, C., & Co.,	995
Morgan, E. A. & Co.,	995
Mueller, A.	1027
Nanz & Co,	851
National Mercantile Agency	1018
National Ring Traveler Co., The	849
New Bedford Textile School	855
New England Butt Co.,	862
New England Mach. Co.	979
New England Ventilating & Heating Co.,	1017
New England Warp Co.,	998
New Process Raw Hide Co.,	863
N. Y. & Boston Dyewood Co,	1012
Nye & Tredick Company,	1022
Oil Seed Pressing Co.	992
O. K. Soap Co.	999
Orswell Mills,	994
Ostrander W. M.,	979
Page Needle Co.,	1037
Parks & Woolson Mch Co.	Outside Back Cover
Pawtucket Dyeing & Bleaching Co.	1006
Paxton & O'Neill,	1027
Pearson, J.T.,	1018
Pennypack Yarn Finishing Co.	1005
Pepper Machine Works	1028
Philadelphia Drying Machinery Co.	844
Philadelphia Textile Machinery Co.,	843
Philadelphia Textile School,	855
Phila. Textile Specialty Mach. Co.	1013
Pittsburgh Gage & Supply Co.	1040
Pocasset Worsted Co.,	990
Popham, Henry & Son	863
Providence Mills Company	1005
Queensbury Mills	997
Replogle Governor Works, The	1038
Riggs & Brothers,	850
Riverdale Woolen Company	1000
Rockwell, E. M.	999
Roessler & Hasslacher Chemical Co,	1007
Rogers Paper Mfg. Co., Inc.,	852
Rowland, Sam'l	1004
Ruth Automatic Ktg. Mach. Co.,	1022
Ryle, William, & Co.,	998
Saco & Pettee Machine Shops,	841
Saginaw Mfg. Co.	1017
Salem Elevator Works	—
Salkeld, A. D. & Bro.,	993
Saranac Electrical Mfg., Co.	844
Sargent's, C. G., Sons,	845
Sayford Paper Specialty Co.	851
scaife, W. B. & Sons	852
Schofield, Geo. L.	980
Scott & Williams	1027
Scranton Yarn Finishing Co.,	1005
Seaboard Air Line	—
Sharpless Dyewood Extract Co.,	1010
Shaw, Victor, Ring Traveller Co.,	851
Shultz Belting Co.	Outside Back Cover
Siggers & Siggers,	871
Skerry, A. T, & Co,	997
Slack, Wm. H. H. & Bro.	1000
Smith, Jas., Woolen Machinery Co.	865
Snyder, Homer P. Mfg. Co.	1036
Solis, Andrew J. Jr., & Co.,	989
Southern Bobbin Co.	851
Southern Railway	855
Speed & Stephenson,	999
Spence & Rideout	1030
Stafford & Holt,	1025
Stearns, A. T, Lumber Co,	1016
Stein, Hirsch & Co.,	1011
Stephenson Mfg. Co.	846
Stevens, D. B. & Co.,	1017
Stillman, V. C.,	779
Straley, Hasbrouch & Schloeder	871
Sturtevant, B. F. Co.,	Inside Back Cover
Suck, Adolph,	988
Sweet & Doyle	861
Sykes & Street,	1011
Taunton-New Bedford Copper Co.,	1014
Taylor, Jas.	1025
Tebbets, E. L. & Co.,	851
Textile Finishing Mach'y Co.	Inside Front Cover 868
Thayer, Edward M, & Co.	1010
Thun & Janssen	846
Thurston, A. G. & Son,	—
Tompkins Bros.	1036
Toohey, M. J. & Co.	992
Torrance Mfg. Co.,	1018
Townsend, Thomas	852
Treat, Orion,	1037
Tucker & Cook Mfg. Co.,	995
Union Button Sewing Mch. Co.,	1035
Union Special Sewing Machine Co.,	1033
United States Mineral Wool Co.	861
Universal Winding Co.,	859
Victor Shuttle Check Co., The,	852
Vila, H. S.	1011
Walcott & Campbell Spinning Co,	995
Walder, J.,	850
Walrus Fibre Mfg Co.,	856
Ward & Vandegrift	848
Wardwell Needle Co.,	1037
Watson, L. S, Mfg. Co,	848
Weimar Bros.	987
Wells, Wilfred	1030
Whitcomb, H. C, & Co,	850
Whitin Machine Works,	838
Whitinsville Spinning Ring Co.,	849
Whiton D. E. Machine Co.,	862
Whittier Mills,	998
Willcox & Gibbs Sewing Machine Co.	1032
Woolford, G., Wood & Tank Mfg.	1016

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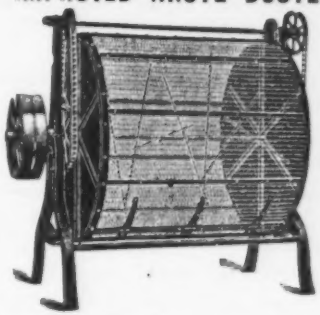

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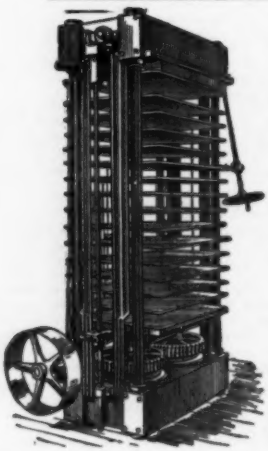

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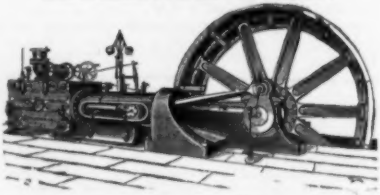

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2021 **Supt., Overseer of Carding,** assistant designer. Worked on sheetings and ginghams. Held position of overseer of carding and assistant to manager for past few years. Age 41; American. First class references.

1877 **Agent or Treasurer.** Good references. Recently assistant manager of a large mill. Fully competent.

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1982 **Supt.** of large experience in the manufacture of woolen and worsted fancies and suitings, is open to an engagement as supt. or designer. Age 45; American; married. Good references.

2028 **Supt.** woolen mill. Age 47; English; married. Wants New England or Middle States. 10 years' experience in first-class N. E. mills.

1537 **Woolen Superintendent, Designer** or Weaver. Has worked on all classes of woolens, worsteds, cotton worsteds, fancy cassimeres, etc., and is acquainted with all Eastern makes of machinery. American. Age 34; married.

2053 **Agent,** or supt., or supt. and designer. Good manager of help and a hustler. Thoroughly understands manufacture of shoddy in all its branches, including carbonizing and extracting. Familiar with all manipulations of wool, shoddy and cotton. Fully competent to take agent's position, as is a good wool buyer and can figure all prices on goods and percentages, etc.

1890 **Manager or Supt.** of a woolen mill, who understands designing, is open to an engagement. 34 years old; Scotch, and single. Large experience in Scotch and Canadian mills on tweeds, worsteds, overcoatings, etc. Good references.

1974 **Asst. Supt.** or Designer, woolen or worsted, who understands designing and also the work of every department. Has worked on fine worsteds, coverts, cheviots, kerseys, meltons and fancy cassimeres. Technical education acquired at Phila. Textile School. Six years' practical experience, three as designer. Age 24, American, good references. Will go anywhere.

1936 **Supt. or Designer,** an American, married, 38 years of age, is desirous of obtaining a position. Understands the manufacture of worsteds, cotton worsteds, cassimeres, meltons—steam face, flannels, and horse and bed blankets. Long experience and up-to-date in methods. Moderate wage.

1976 **Manager and Buyer.** Blankets, yarns, rugs and government cloths. Young Englishman, 30, managing a plant of 19 sets cards add 200 looms in England, desires similar position in Canada or the States. Thoroughly practical in every department. Can invest up to $1,500 into a small business of this kind.

1955 **Supt. and Designer,** English, 32 years old, married, is open to the above position in a woolen mill. 17 years' experience in England and this country on cassimeres, overcoatings, woolen dress goods, plaid backs, skirtings and cheviots. This is a good opportunity to obtain a young man of long experience.

1891 **Supt. of Woolen or Worsted** Mill, who understands designing, is open to a position. 23 years of age; an American; single. Well recommended, and with good experience.

WOOLEN CARDERS.

2079 **Overseer of Carding and Spinning.** Middle aged; English; married. Dress goods, flannels, blankets, overcoatings and plush goods. English and American makes of machinery, also an expert on the Bollette condenser.

2057 **Carder,** or carder and spinner. Age 28; German; married. All wool, wool and cotton and shoddy mixes. Davis & Furber, James Smith and Lombard machines.

2055 **Boss Carder.** Cotton, woolen, worsted and silk mixes of all kinds. Can take place at once, and wants not less than $3 per day. Age 48; American; married. Excellent references and experience.

2041 **Second hand of** large or overseer of small carding room is open to a position. 27 years old; American; married. Has had 12 years' experience on wool, wool and cotton, all shoddy and all grades of yarn. Now employed as second hand, but feels capable of taking charge of small room.

2046 **Boss Wool Carder** is open to a position. Age 45; American; married. Is familiar with most all classes of woolens. Will not go West or South. Thoroughly understands mixing and blending together different kinds of stock.

2069 **Overseer of Woolen Carding,** age 32; American; married. Good experience and excellent references. Worked in kerseys, meltons, cheviots, cassimeres, coverts, dress goods broad cloths, etc.

COTTON CARDERS.

2054 **Overseer of Cotton Carding** or combing. Englishman; 47 years old; married. Wants not less than $3.

2060 **Overseer of Carding** on cotton and purely white work. Thoroughly understands combing. Is familiar with most all kinds of machinery, both English and American.

2063 **Overseer of Carding.** Age 34; American; married. Worked mostly on yarns, combed and carded. Wants $3.50 or more, according to position

2022 **Overseer of Carding.** Age 47; American; married. Worked on both wool and cotton. Is familiar with Davis & Furber and James Smith machinery

2073 **Overseer Cotton Carding or Spinning** desires position. Age 47; American; married. Is familiar with all the modern makes of English and American machinery, revolving top flat cards, single and double carding.

2075 **Overseer Cotton Carding.** Age 35; married. 12 years' experience as overseer. Worked on all kinds of yarns from 10s to 150s, combed and carded, and is familiar with all makes of English and American machinery.

1736 **Practical Comber** man wants position. Thoroughly understands the business. Will take position in any cotton mill in taking down and resetting over old combers, or as comber fixer in a large mill. Has run all grades of cotton. Will bring references, if required.

WOOLEN SPINNERS.

1784 **Worsted Drawer and Spinner** Would take twisting. Age 28; English; single. Can furnish references as to ability and character.

2040 **Overseer of Ring or Frame Spinning,** or would take superintendent position. Age 41; married.

2078 **Overseer of Spinning.** Fancy cassimeres, ladies' dress goods, overcoatings. Worked on both cheap and fine grades of woolen yarns. Davis & Furber mules and operators, Johnson & Bassett and Bancroft. Aged 28; American; married.

1987 **Overseer** of woolen spinning desires to make a change. Is familiar with suiting, union, cassimere, satinet and knitting yarns and all ordinary makes of machinery. 30 years of age; American; married. Good references as to character and ability.

1917 **Overseer Woolen Spinning.** Is thoroughly competent to take charge of a large spinning room. 38 years old; French; married. Has spun yarns for flannels, tweeds and knit goods, also cotton and wool mixes, shoddies, ranging in all from ¼ to 14 runs. Is familiar with Davis & Furber, Johnson & Bassett, Platt and other makes. Very satisfactory references.

1709 **Worsted Spinner or Section** Hand. Age 22 and unmarried. At present employed, but not satisfied with surroundings. Would accept moderate pay

COTTON SPINNERS.

1960 **Overseer of Cone Winding** and spooling or ring spinning, who understands Universal, Foster, Broadbent and Payne winders, and Whitin and Mason frames, desires a position. Has worked on carded and combed yarns from 4s to 160s; also, mercerized, gassed and bleached yarns from 2 to 8 ply. Young man; American; married, and can give satisfactory references from large mills.

2003 **Overseer of Mule Spinning** who has had a wide experience in large New England mills on yarns ranging from 24s to 160s is open to a position. 37 years old; American. Good references.

1690 **Cotton Mule Spinner.** Age 42; French; married. Has worked on prints and sheetings and on yarns from 9's to 50's. First class references. Two years' experience as secondhand and five as overseer. Wants $2.50 per day to start with.

1519 **Overseer Spinning.** Age 31; American; married. Has worked on yarns from one run to 5¾. Will accept an average salary. At present employed, but wishes to better himself.

1862 **Overseer of Spinning.** Familiar with Johnson & Bassett, Davis & Furber and Campbell & Clute machines. Has had 18 years' experience as an overseer, and is a handy man. Excellent references.

1950 **Second Hand on Mules.** Has had 20 years' experience on cotton mule spinning as mule fixer and second hand. Age 39, with family. Good references.

COTTON WEAVERS.

2034 **Overseer of Weaving** is open to a position. Age 33; American; married. White sheetings and drills. Mason, Whitin, Lowell and Knowles looms. Wants work in Western or Southern States. Experienced fixer and overseer.

1806 **Practical Boss Weaver** and loom fixer wants position. Good and long experience. Good record for big production; good quality and for being a good manager of help, and for getting and keeping plenty of good hands. A sober and steady man. Will go anywhere. Either cotton, woolen or jute.

2039 **Overseer of Weaving.** Has had charge of winding and warping and slashing. 18 years' experience in cotton mills, and can give the best of references as to ability. Worked in some of the best mills in the country as loom fixer, second-hand and overseer. Plain, leno and fancy goods.

2058 **Overseer of Weaving** or designing. Age 38; English. All kinds of cotton dress goods, also suitings. Both English and American machinery. Wants not less than $3.50 per day.

2016 **Overseer of Weaving.** Age 35; Scotch; married. Good experience, and excellent references. Crompton, Whitin, Lowell, Colvin, Woonsocket and English looms. Sheetings, lawns, ginghams, flannels, fine worsteds, dress goods, shirtings and novelty goods.

WOOLEN WEAVERS.

1959 **Boss Weaver,** who is familiar with cotton, woolen and worsted looms, and all classes of goods, is open to a position in a large mill. 46 years of age; American; married. Strictly temperate and is recommended by some very large N. E. woolen and cotton mills.

1964 **Boss Weaver,** familiar with all makes of woolen and worsted machinery, and who has worked on ladies' dress goods and men's wear, desires a position. 39 years of age; American; married. Can give good references.

2051 **Overseer of Weaving** or designer. Age 29; American; married. Thibets, meltons, kerseys, worsteds and cotton worsteds. Crompton & Knowles looms. Good experience. First class recommendation.

2019 **Boss Weaver** or assistant designer. Wants position with a firm who is willing to advance a man as he proves himself worthy. 28 years old; married, and a steady worker. For past six years worked in all part of the weave room and pattern room, pattern weaving and dressing, chain building, harness raising, perching, fixing and regular weaving. Now taking course of study in woolen and worsted designing. Excellent reference.

2008 **Overseer of woolen** or worsted weaving. Would consider second hand or good fixing job. Age 37; married; American. Wants N. E. States. Worked on all classes of woolen and worsted goods, including paper makers' felts. All kinds of harness looms.

866 **Boss Weaver** or Assistant Superintendent. Age 32; American; married. Worked on nearly all classes of ladies' and men's wear goods, both wool and worsted.

KNITTERS.

1993 **Boss Knitter and Fixer** on ladies' and gents' ribbed underwear on S. & W., N. & T., M. & W., B. & D., S. & H., Ruse, Champion, S. & P. machines is open to a position in any part of the United States. 30 years old; American; married. Good references. Wants $4.

2062 **Foreman of Knitting Room,** spring needle or flat knitting. Age 28. Fleeces of all kinds and gauges, balbriggan from 20 to 30 gauge, flat wool work all gauges. Is familiar with Tompkins Bros., Campbell & Clute and Crane machines.

1951 **Overseer** of cuff knitting, who thoroughly understands fixing Tiffany and Cooper machines, wishes position. 45 years of age; English; married. Good references.

1554 **Boss Knitter.** Underwear, Jersey ribbed, lisle, wool, plaited work, silk. Can handle any latch machine. Good references. Age 26; married.

2036 Open to take the management and superintendency of a rib mill in one of the Southern States. Has had a large experience as a manager and the fitting up of mills. Can give the best of references as to ability, sobriety and character. Is familiar with all kinds of ribbed goods. 35 years of age; American; married.

1951 **Cuff Knitter and Fixer.** Wants a place where he will have steady work.

2038 **Machine Fixer** or foreman is open to a position. Age 23; American. Will go anywhere, but prefers southern States. Silk and cotton half hose, misses' ribbed and ladies' hosiery. Is familiar with Standard B, Brinton, Branson, Scott & Williams knitters, also embroidery machines and several makes of sewing machines.

2026 **Fixer** and machinist on Leighton circular sweater and jacket machines. 15 years' experience. Age 35; American; married. Will consider nothing less than $15 per week. Good references.

2056 **Machine Fixer** or foreman. Age 25; German; unmarried. Is familiar with Boss, Standard, Invincible, new Victor, Excelsior, Brinton, Branson, Scott & Williams, Paxton & O'Neill and all kinds of rib machinery.

2047 **Factory Manager** in a cotton hosiery mill. Prefers to be located in the middle South, but will go anywhere. Experience large and varied. Cotton and worsted hosiery of all grades.

2007 **Supt. or Mill Manager** Age 27; single. Is practical in any department. Able to adjust loopers, ribbers, etc. From shipping clerk has had charge in turn, pressing and drying, looping, paring and packing departments. Has hired labor, made up new lines and bought some of the stock. Is familiar with office work.

2018 **Foreman** or fixer of a knitting mill making golf goods, sweaters, cardigan jackets, caps, petticoats and other kindred goods. Age 31; German; married.

1973 **A Boss Knitter** on ribbed underwear, cotton or wool, is open to a position. 27 years old, French Canadian, married. Has been boss knitter in the United States for several years, and can give good references. Thoroughly familiar with all well-known makes of ribbed underwear machines. Wants $3 per day.

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DESIGNERS.

1996 **Designer or Assistant Superintendent** desires a position. 27 years old; Scotch: married. Familiar with all well known makes of machinery and with woolen, worsted and cotton goods. Good references. Will go to any part of the United States. Terms reasonable.

1997 **A Young Man,** 23 years of age, English, would like a position as assistant designer or boss weaver. Has worked on woolen dress goods, cloakings, suitings and worsted suitings. Good references. Moderate wages. Three weavers in family.

2044 **Designer** in cotton or mixed goods is open to a position. Age 24; English; married. Almost all kinds of cotton goods, leno and lappet effects, colored work and weaves of all kinds from 2 harnesses up to and including jacquard work. Wants $3 50 to $4 per day to start.

1923 **Assistant Designer** on woolen or worsted dress goods and suitings is open to a position. Age 21; American; single. A graduate of one of the largest textile schools in the country, and has had experience in a good New England mill. Also understands flannels and satinets. Good references.

FINISHERS.

2004 **A Boss Finisher** of over 25 years' experience on fancy cassimeres, worsteds, dress goods, serges and a large variety of steam finished goods, beavers, kerseys, cloakings, meltons, cheviots, etc., is open to a position 44 years old; American; married. Good references. Moderate terms.

2070 **Overseer of Finishing,** age 32; American. Woolen and worsteds, suitings, coatings, cloakings, cassimeres, cheviots, meltons, frieze, etc.

1870 **Foreman of Finishing** room, folding, packing, etc. Age 40; married; American. Has had over 12 years' experience as foreman on white goods in one of the largest bleacheries in the country. First-class manager of help and capable of getting good results.

2061 **Boss Finisher.** Would take good secondhand or wet finishing job. Age 41; English. All kinds of woolen and worsted goods, both steam and dry finish. Willing to go anywhere. Both English and American makes of machinery. Excellent references.

1990 **A Foreman** in Finishing room on all kinds of cotton piece goods. Accustomed to all kinds of folding, packing, etc., and machinery used therein. English, married, age 36. Five years in last situation. Has been in this country 12 years. Can give references from present and past employers.

2080 **Overseer of Finishing.** Age 30; American; married. Woolens, worsteds and cotton mixes. Prefers worsted mill.

DYERS.

1972 **Boss Dyer** of large experience on cotton, cotton and wool, shoddy waste, camel hair raw stocks; all wool flannels, ladies' dress goods, worsteds, friezes and Union piece dyes; and skein dyeing, hosiery, etc., is open to a position in a woolen, worsted or hosiery mill. 50 years of age, English (naturalized), married. Best of references. Terms moderate.

1995 **Boss Dyer** who has been 12 years in a large Connecticut woolen mill is open to a position with any good concern. 40 years old; American; married. Piece dyes, yarns, mohair, wool stock, indigo vats, fancy shoddies and raw cotton. 17 years' experience. Good references. Terms moderate.

1979 **A Boss Dyer,** who has been assistant dyer in one of the largest mills in the United States for the last ten years, is desirous of making a change. Is familiar with wool slubbing, worsted yarn, and pieces; cotton raw stock, skein and warp yarn, pieces, and also Union goods. Understands all modern dyeing machinery. Best of references. Salary moderate.

1966 **A Color Mixer,** chemist or cotton piece dyer is open to a position English; 30 years old; married. Was assistant manager of large print works in England for three years, and can refer to well-known men. Terms moderate.

2013 **Superintendent** of dyeing and finishing, or assistant manager of a woolen mill where dyeing and finishing is done. Can design. Age 41; English; unmarried. Worked on all classes of woolen and worsted goods, cotton linings, cotton velvets and plushes. To secure permanent position is willing to start for small salary.

2065 **First-Class Dyer,** Bleacher an Mercerizer is open to a position Had a lifelong experience on cotton yarns unions, merino, hosiery, underwear, tapes and braids. Would like to get a position in a dye-house just starting, if possible. Is competent of erecting and equipping a modern dye plant.

2064 **Overseer of Dyeing** and finishing. Has worked on all kinds of piece dyeing, both cotton and wool, and all kinds of raw stock, dress goods, blankets and fancy cassimeres. Is familiar with Curtis & Marble, Parks & Woolson and Hunter fulling mills. Good references.

1908 **Boss Dyer and Bleacher.** Age 23; American; single. Now employed, but will change for good job. Best of references from present employers.

1948 A young man, age 21, American; single; now employed in a dye house of a knitting mill, would take a position as second hand in a dye house of some large mill. Has had experience in the dyeing and bleaching of cotton and union knit goods, and also has had two years' experience in an aniline laboratory.

2052 **Expert Hosiery Dyer.** Age 27; best of references, married and sober. Has had practical experience in dyeing one of the best aniline blacks and fast colors on cotton, wool, union and silk hosiery. Desires position as superintendent of dyeing in a first-class hosiery mill. One manufacturing high grade goods preferred.

2037 **Dyer** of any kind of carpet or rug yarns is open to a position. Been with one firm a number of years.

MISCELLANEOUS.

1803 **Roll Coverer.** I have done the work for a number of the largest cotton and worsted mills in this country, and am well known throughout the trade. Have been in the business 35 years, and can furnish stock and tools. Would be glad to take piece work, if shop is furnished, or would take a place by the day. Can furnish best of references.

2025 **Master Mechanic** wishes position in the North. 35 years old; married. Worked 15 years on repairs. Wants $3 50 per day. Has license for running engines and boilers. Understands all kinds of water wheels and care of same, dynamos and electric lights and also gas houses, and a good knowledge of building, all kinds of wood work and piping and blacksmithing Understands cotton mill repairs as good as the best man at such work.

2029 **Overseer of Spooling,** warping, Twisting, reeling, coning in large mill, or spinning added to above in a 12,000 to 15 000 spindle mill, is open to a position. Age 31; Canadian; married. Excellent references.

2030 **Loom Fixer.** Age 43; American. Is familiar with Crompton & Knowles, Davis & Furber, either broad or narrow Gilbert and Lewiston looms.

2045 **Colorist** and color mixer for all kinds of printing. Also understands plush printing and extract work. 10 years' experience. Can give references.

1980 **An Expert** on soap making and wool scouring will be open to a position shortly. Is familiar with the treatment of all grades. About 40 years old. English; married. Has worked for one concern in the United States for 12 years.

2071 **Foreman** or sewing machine repair man, age 32; American; married, is open to a position. Experience in drying, napping, trimming, finishing and dressing of flat goods, also care of help and machines. Is familiar with Singer, Union Special, Willcox & Gibbs, Wheeler & Wilson, National and Union machines. Men's, ladies' and children's flat goods, fleece lined.

1905 **Sewing Machine Fixer** and machinist, age 25 years, is open to a position. Worked eight years at the business, and can take charge of all kinds of sewing machines and keep them in repair, used in finishing underwear, overalls, men's shirts, skirts, waists, wrappers, handkerchiefs, etc.

2068 **Assistant Supt.** Chief or Mechanical Engineer. Age 38. Technical graduate. 15 years' practical experience in cotton and flax mill repairs and equipment, well acquainted with cotton, flax, tow and jute machinery, and detail construction of same, also with the installation of power plants and power transmission. Would make a first-class mechanical superintendent. Best of references. Prefers New England

1711 **Mill Engineer** and draftsman of experience, would like an engagement with a textile corporation, as above or in connection with some other responsible position.

From Loom Fixer to Second Hand

I would not take three times the amount I have paid for what I have already learned. When I enrolled, I was a loom fixer; but, as a result of my training by mail, I now hold the position of second hand, in a weave room of 1,260 looms and have bright prospects for further advancement. CHAS. E. BLAIR, *Suncook, N. H.*

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	Boss Cotton Spinner		Steam Engineer
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	Boss Woolen Carder		Surveyor
	Boss Woolen Weaver		Architect
	Woolen Designer		Chemist
	Cotton Designer		Bookkeeper
	Mechanical Engineer		Stenographer
	Mechl. Draftsman		To Speak French
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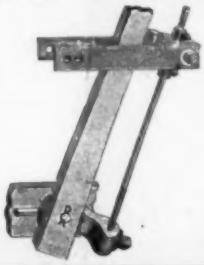

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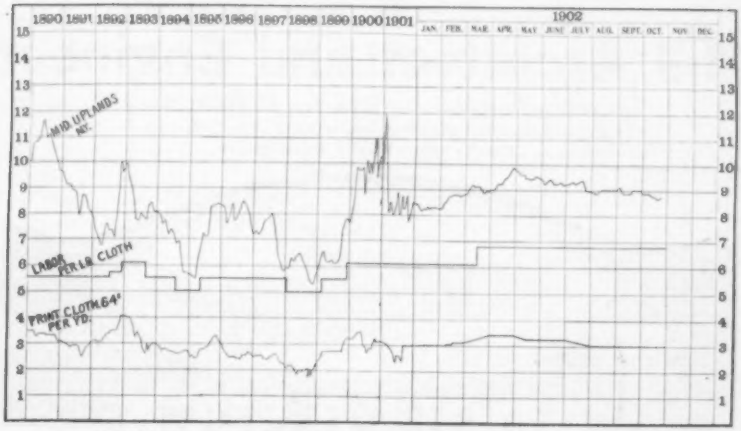
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CHART SHOWING RANGE OF PRICE OF COTTON TO DATE.

Cotton Market.

Cotton has declined fractionally since our last report and the size of the new crop has not been determined with sufficient accuracy to warrant either the bull or the bear interests basing operations upon it. Weather conditions have been favorable. The movement of cotton toward the seaboard slackened somewhat toward the end of the month, but the export business has been of large volume. This is ascribed to the low rates prevailing for ocean frieght. The cost of transporting cotton from the South of Liverpool is less than from the South to Fall River.

The see-saw of prices has been, as usual, due to speculative influences and the narrow limits within which the fluctuations have been kept are due to the uncertainty as to the size of the new crop.

The government has undertaken a new plan for estimating the size of the crop, viz., by the reports from the ginneries. These reports have not reached the stage where any estimate of the whole crop is warranted and even when the statistics of the whole year are completed there will be no previous years with which to compare them. For these reasons we must give up any expectation of securing this year reliable data as to the cotton crop from this source although the plan has excellent features and it is generally expected that it will prove much superior to the old haphazard system of guessing.

The Chronicle estimates the world's visible supply on October 24 at 2,494,195 bales, as compared with 2,493,759 bales in 1901, 2,671,775 bales in 1900 and 3,553,344 bales in 1899.

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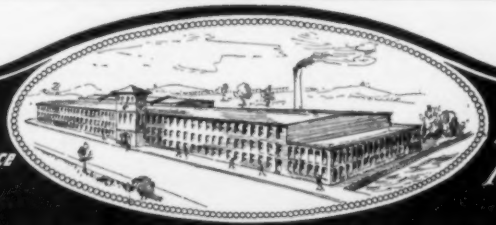

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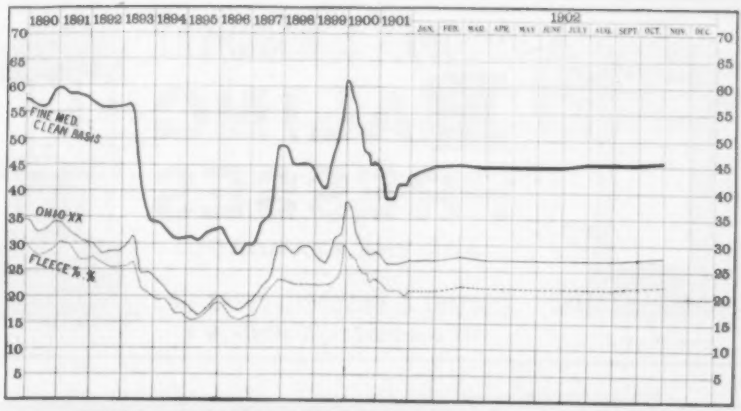


CHART SHOWING RANGES IN THE PRICE OF WOOL TO DATE.

The Wool Market.

Since our last report a brisk business has been carried on in the wool market, and while prices have not advanced, they have been very firm. There is a well defined disposition on the part of the wool dealers themselves to discourage any material advance and thus encourage the use of wool substitutes.

Here and there throughout the market dealers may be found whose ideas in certain lines are above the general average of the market, and their asking prices that have resulted only in preventing sales have formed the basis for claims of a market advance in the price of wool.

The actual business has been transacted on the basis indicated by the lines on our chart. The mills are busy and they occupy a strong position as regards their customers, who are in many cases clamoring for goods and complaining bitterly of slow deliveries.

The improvement in the general industrial condition of the country has supplied a feeling of security to business interests.

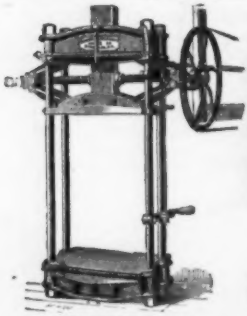
A significant feature of the wool market is the advance in Australian wool in the Melbourne market, estimated in some cases as high as 20 per cent. above last year's figures. There is little doubt but that the large consumption of wool throughout the world combined with a diminished supply has supplied a firm basis for the advance referred to.

We have recently received an object lesson regarding our dependence upon a supply of coal. It is by no means impossible that a similar lesson may some day be learned in regard to that other important means of keeping warm in cold weather, the supply of wool.

Bindings, Webs etc.
Spool Tapes and Stay Bindings.
HAMILTON MILLS.
J. H. HAMILTON & CO. 84 FRANKLIN ST., NEW YORK.

CROCHET LACE EDGINGS
TAPES—BRAIDS—THREADS
DOMETS—CAMBRICS—SILESIAS
GEORGE W. CHAPIN,
YARNS
Successors to FLEMING & CHAPIN.
229—CHURCH ST.—231 PHILA.

YARNS
SOLIS : : BOSTON.
179 Devonshire Street.
ANDREW J. SOLIS, Jr. & CO.



KNUCKLE-JOINT.

BOOMER & BOSCHERT

BALING PRESSES

ARE THE STANDARD.

Boomer & Boschert Press Co.

338 West Water St., SYRACUSE, N. Y.

HYDRAULIC

EASTON AND BURNHAM MACHINE CO.,

Pawtucket, R.I.

ALL KINDS OF Spindles USED IN THE MANUFACTURE OF COTTON, WOOL & SILK

IMPROVED UPRIGHT SPOOLERS

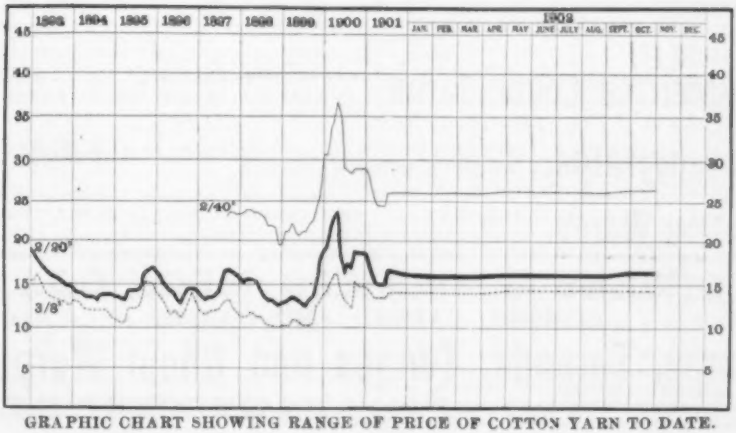
TO SPOOL FROM COP, SKEIN, OR BOBBIN.

Knitting and Weaving Yarns

Cones, Cops, Warps, Skeins,
Single, Double, Three-ply, etc.
Peeler, Egyptian, Mixed Colors.
Large Assortment.

EDWARD S. HYDE, 223 and 225 Chestnut Street, Philadelphia, Pa.

YARN DEPARTMENT.



GRAPHIC CHART SHOWING RANGE OF PRICE OF COTTON YARN TO DATE.

The Cotton Yarn Market.

The activity noted in our last report has not been maintained and during the latter part of the month quotations became so irregular as to leave the observer in doubt whether the market was advancing or declining. There is little doubt, however, that the cotton yarn market is in better shape than some months ago. This has been brought about by a curtailment of the production of the coarse counts by southern mills.

A large business has been done by dealers and the only reason why it has not been accompanied with an advance in price is the presence of large stocks which have been pressed for sale. When it comes to contract business, spinners are very firm and have repeatedly turned down orders for yarn which would have been accepted if the goods had been in stock. This policy is due to the comparatively high price of raw cotton which makes a profit impossible at the present prices for stock yarn. The mills spinning fine yarn occupy the best position and the buyers of mule yarn find it impossible to place contracts for large lots, and must content themselves with taking what the spinners are willing to apportion as their share of the production.

The only danger now is that the improvement in prices which has occurred during the last three months may induce spinners to increase their production of coarse counts and thus bring on a return of the malady from which the trade has been suffering for over three years.

We quote as follows:

Cops.

6s	15¼
8s	15½
10s	15¾
14s	16¾
16s	17½
22s	19
24s	20
26s	20¾
30s	22¼
34s	24¾
36s	25¾
40s	27¾

On cones, ¾c. more up to 14s; 1c. more from 15s to 22s; 1½c. from 23s to 35s, and 2c. above that.

Eastern Two-Ply Skeins, Carder Peeler.

12s	16½-17
14s	17-17½
18s	18-18½
20s	18½-19
22s	19-19½
26s	20-20½
28s	20½-21
30s	21-22
36s	23-24
40s	25-26
45s	27-28
50s	31-32
55s	35
60s	39-40

Eastern Two-Ply Warps, Carder Peeler.

2/30s	21-22
2/36s	23-24
2/40s	25-26
2/45s	29-30
2/50s	33-34
2/60s	42-43

Egyptian Weaving Yarns.

Single Skeins Combed.

30s	33-34
35s	35-36
40s	37-38
45s	39-40
50s	42-43
55s	45-46
60s	50-51
70s	59-60

The J. R. MONTGOMERY CO.,

WINDSOR LOCKS, CONN.

Manufacturers of

Mercerized Cotton Yarns. GIVES THE HIGH SILK-LIKE LUSTRE IN KNIT GOODS AND WOVEN FABRICS

Novelty Yarns. BOUCLE, BOURETTE AND SPIRALS, IN COTTON, WOOL WORSTED, MOHAIR AND SILK.

Cotton Warps. ON BEAMS, JACK SPOOLS AND TUBES. IN FANCY TWIST COLORS AND PRINTED.

GREENE & DANIELS MFG. CO.,

COMBED, CARDED AND GASSED

Yarns, Threads, Twines and Chain Warps,

Colored and Bleached Yarns Furnished in any manner desired by the trade. PAWTUCKET, R.I.

MONUMENT MILLS,

Manufacturers of

White, Colored, Fancy and Double Twist

Cotton Warps

HOUSATONIC, MASS. 4s to 60s.

OIL SEEDS PRESSING COMPANY,

Manufacturers and Importers of

VEGETABLE OILS.

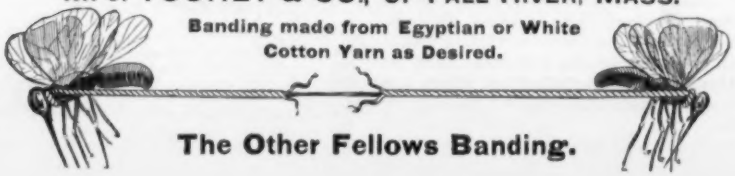
15 to 25 Whitehall Street, - - New York.

BALLOU YARN COMPANY, PROVIDENCE, R. I.

GASSED YARN, Harness and Seine Twines and other Job Gassing, Winding, &c. All Numbers. SPECIALTIES

M. J. TOOHEY & CO., OF FALL RIVER, MASS.

Banding made from Egyptian or White Cotton Yarn as Desired.



The Other Fellows Banding.

80s	70-72
90s	74-75

Two and Three Ply Skeins, Combed.

30s	36-37
36s	38-39
40s	39-40
45s	41-42
50s	45-46
56s	48-49
60s	51-52
66s	55-56

Philadelphia Yarn Market.

The yarn market has been very active recently. A surprising shortage has developed in stocks and deliveries, both in weaving and knitting yarns. Many mills are sold up, especially on mule yarns and have nothing to offer and customers are obliged to place orders in small lots, at the full advance, to keep them running.

Combed Egyptian yarns are not being promised in less than 4 to 6 weeks time.

The present market today on yarn is about as follows:

Best eastern mule yarn, 10s cones at 16¼ to 17c.

Southern high grade mule yarn, 16 to 16½c.

Southern high grade frame yarn, 10s, at 15½c.; 16s at 16¾ to 17c., and 22s at 17½ to 18c.; 30s at 20 to 20½c.

Warps, 2/20s at 16 to 16½c.; 2/30s at 19½c.

Skein, 14s at 15 to 15½c; 20s at 15½c.; 22s at 16c.

The above being the most active counts at present.

We quote as follows:

7s and coarser	14½-15
8s and 9s	14¾-15¼

Southern frame cones (good quality):—

10s	15-15½
12s	15½-16
14s	16-16½
16s	16½-17
18s	17
20s	17½
22s	18
24s	18½
26s	19
30s	20
40s	26
50s	32

Southern high grade mule yarn:—

Cones.

10s	16-16½
12s	16½-17
14s	17-17½
16s	17½-18
18s	18-18½
20s and 22s	19-19½
24s	19½-20

RICHARD A. BLYTHE,
Commission Merchant,
Cotton Yarns of every description.
114 Chestnut Street, - PHILADELPHIA.

Buckingham, Paulson & Co.,
COMMISSION MERCHANTS.
COTTON YARNS of all Descriptions.
83 Leonard St., New York.
120 Chestnut Street, Phila. 530 5th Ave., Chicago. Ills
Cash Advances, Cash Sales and Prompt Returns. Consignments and correspondence solicited.

JAMES E. MITCHELL & CO.,
COMMISSION MERCHANTS.
COTTON YARNS
FOR ALL PURPOSES.
122-124 Chestnut St., PHILADELPHIA, PA.
Brown Building 185 Summer St., BOSTON, MASS.

LINEN YARN IMPORTER.
Hughes Fawcett, 115 Franklin St., New York,
Flax, Hemp & Jute Line and Tow Yarns,
FOR WEAVING PURPOSES
Linen Jacquard Harness Twines.
Fine Cotton Harness and Heddle Twines.
For Cotton, Silk, Woolen and Carpet manufacturers. Correspondence solicited. Samples promptly furnished.

J. S. DODDS,
346 Broadway, N. Y. Life Bl'd'g., New York, N.Y

MERCERIZED YARNS
Two and Three Ply, for All Purposes,
In Peeler, Egyptian and Sea Island, gassed and ungassed, natural and dyed. Fast Black for cross dyeing a specialty.
Through H. A. CAESAR & CO.

A. D. SALKELD & BRO.
With
FRED'K VIETOR & ACHELIS.
YARNS,
66-72 LEONARD ST., NEW YORK.

MOELLER & LITTAUER,
IMPORTERS AND MANUFACTURERS OF
Silk, Worsted, Woolen, Cotton & Mohair Yarns and Tinsel Chardonnet Artificial Silk.
Mercerized, Turkey-Red, Swiss Emb. Yarns.
109 Green St, NEW YORK.

E. C. HARPER.
WORSTED AND WOOLEN YARNS,
MERCERIZED COTTON,
395 Broadway, New York.
Tel. 1828 Franklin.

Eddy & Street,
COTTON, WOOLEN, **YARNS** AND **BRAIDS** WORSTED, SPUN SILK.
PROVIDENCE, R. I.

CAPACITY, 50,000 Spindles.

ORSWELL MILLS

FITCHBURG MASS.

COMBED OR CARDED

COTTON YARNS

In Chains and Skeins, on Balls, Beams, Spools—single or twisted.

WILLIAM FIRTH, PRESIDENT. FRANK B. COMINS, TREASURER

AMERICAN MOISTENING COMPANY,

150 Devonshire St., Boston, Mass.

The "Drosophore" and "Vortex" Humidifiers.

Over 20,000 of our HUMIDIFIERS in operation.

Highest award on the Recommendation of The FRANKLIN INSTITUTE for

"SIMPLICITY and ORIGINALITY of DESIGN"

DANA WARP MILLS

Westbrook, Maine.

WHITE AND COLORED WARPS,

6s to 50s—Single and Ply.

MULE COPS,

from 30s to 50s from

AMERICAN AND EGYPTIAN COTTON.

Indian Orchard Company.

Cotton Warps and Yarns. In Gray and all Colors, Single or two or more Ply, and Cable Cord.

Novelty Yarns. in Various Patterns, Colors and Twists.

Carded and Colored Cotton. For Mixing with wool, Machined or in Roving.

Indian Orchard, Mass.

E. MORGAN, PRES. H. B. WRIGHT, TREAS. W. C. GODFREY, AGT.

Southern frame yarn, lower grades:—

6s and 8s	14-14½
10s	15

Eastern cones (high grade quality):—

10s	16½
12s	17
14s	17½
16s	18
18s	18½
20s and 22s	19-19½

Lower grades Eastern yarn:—

6s and 8s	14½-15
10s	15-15½

Rise 1/4c. per number to 16s.

Besides this there is some comber waste used, that is made into 8s and 10s cones and sold at 14½ to 15.

Skein yarn (mostly Southern):—

4s to 6s soft	14¼-14½
10s to 12s	14½-15
14s to 20s	15¼-16
22s	16-16¼
14/2	14½-15
16/2	15½-16
20/2	16¼-16½
30/2	18½-19
40/2	24
16/3 slack	15½-16
12/3 slack	15
8/3 carpet	14-14½

Skein yarn (mostly Southern):—

8/3 slack	14½
9/4 slack	14½

Warps (mostly Southern):—

14s to 16s	15-15¾
20s and 22s	15¾-16
26s	16¼-17
14/2	15½-16
16/2	15¾-16
20/2	16½-17
24/2	17½-18
30/2	19-19½
40/2	24

Mixed colored yarns (mock twist, half colors):—

6s to 10s	16-16½
12s to 14s	17-17½
16s to 18s	18-18½

Silver and jaeger, 1½ to 2c. over white.

Mock Egyptian, 3c. advance over white.

Egyptian, 4c. to 5c. above best quality white.

Worsted Yarn.

Spinners continue busy and in many instances have contracts which will carry them until June before further orders can be accepted. Some spinners are unwilling to accept orders extending over a long period, then again there are some who will accept only a portion of

WILLIAM B. CHARLES,
Cotton Yarns, Cotton Cloth,
Silesia, Sateens
for the Underwear Trade.
Amsterdam, - N. Y.

CATLIN & CO.,
YARNS.
67 Chauncy St., Boston
210 Church St., New York.
206 Chestnut St., Philadelphia.

Walcott & Campbell Spinning Co.
FANCY HOSIERY YARNS
IN ALL COLORS.
New York Mills, Oneida Co., - N. Y.

E. JENCKES MFG. CO.
Colored Cotton Hosiery Yarns,
Double and Twist Yarns for
the Weaving Trade.
PAWTUCKET, - R. I.

TUCKER & COOK MFG. CO
MANUFACTURERS OF
WHITE AND COLORED COTTON WARPS
Nos. 6s to 30s,
On Beams, Jack Spools or in Chain
CONWAY, MASS.

GRANT YARN CO.,
COMBED AND CARDED COTTON.
YARNS AND WARPS
40s and above.
FITCHBURG, MASS.

COTTON, WORSTED,
WOOLEN, MERINO AND
FRENCH SPUN YARNS
Mercerized Cotton a Specialty
Write for Samples.
E. A. MORGAN & CO.,
84-86 Franklin St., N. Y. City.

EICHMANN & STERNBERG
530 Broadway cor. Spring St., NEW YORK.
Mercerized, Turkey Red, Gassed } Cotton Yarns.
Jacquard and Harness Twines.

C. MOORE & CO.,
MANUFACTURERS OF
TWINES, THREADS AND YARNS.
Jacquard Harness Twines of all kinds on hand and made to order.
S.W. COR. FIFTH & MARKET STS.
Philadelphia.

HOWLAND CROFT, SONS & CO.

LINDEN WORSTED MILLS.

Fine Worsted Yarns

OFFICE AND MILLS:

Broadway and Jefferson Ave., Camden, N. J.

Represented by FIRTH BROADHEAD,
937 Banigan Building, Providence, R. I.

ALLEGHENY WORSTED MILLS,

Thomas Wolstenholme, Sons & Co.,

MANFRS OF

ALL NUMBERS SINGLE AND TWO-PLY,

Worsted YARNS,

Sell Direct,

on Cop or in Skein, for Weaving and Knitting Purposes, in White, Natural & Fancy Mixes

Office and Mills: Frankford Ave. and Westmoreland St., Phila., Pa.

CRANSTON WORSTED MILLS.

Worsted and Mohair Yarns—white or colors, in skeins, on spools, cones, or shuttle bobbins.

NOVELTY YARNS—of Mohair and Worsted. We are the only manufacturers in the United States making these yarns from the raw material to finished product and making Yarns **only.**

CENAPPED YARNS of all kinds. Doup Yarns. Harness Yarns. For Braids, etc.

...Dyers of Yarn and Slubbing...

BRISTOL, R. I.

FRENCH SYSTEM. BRADFORD SYSTEM

B. F. BOYER CO.,

MANUFACTURERS OF

Worsted and Woolen Yarns

OFFICE AND MILL: Delaware and Cooper Streets. CAMDEN, N. J.

MALCOLM MILLS CO.,

MANUFACTURERS OF

Novelty Yarns, Silk Noil Yarns, in Fast Colors AND White.

Mills, Frankford, Pa. Office, 220 CHESTNUT ST., PHILA.

SAVOGRAN

CLEANS WOOL, FLOORS ANYTHING.

INDIA ALKALI WORKS, Boston.

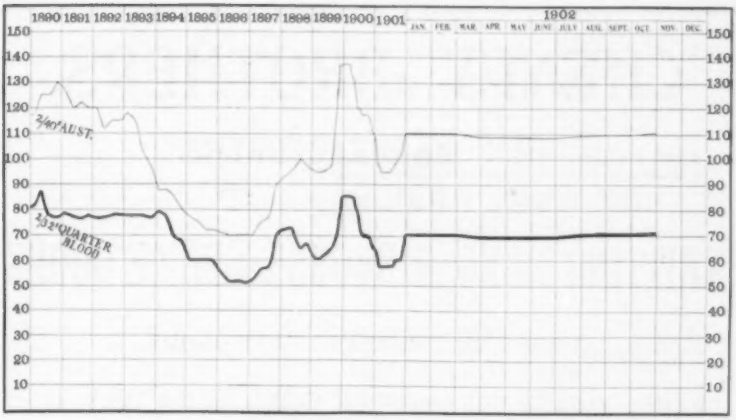


CHART SHOWING RANGES OF PRICE OF WORSTED YARN.

the orders placed, while, on the other hand, the spinners asking prohibitive prices are securing no orders.

The spinners manufacturing specialties such as fancy double and twist are securing the greatest amount of satisfactory business. The spinners insist that prices are bound to advance still further although one spinner acknowledged that fine worsted wool was four or five cents too high and a reaction would surely be the result.

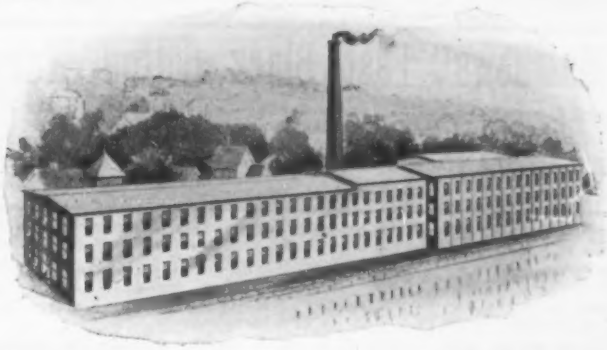
At present, however, prices for worsted yarn are firmly maintained, but extreme prices are impossible to secure. The whole outlook is one of contradiction.

Weavers of men's wear are very conservative in placing orders for yarn. They will buy only to cover immediate requirements and will place but few orders for future business. They are either expecting or hoping for a break in prices.

Weavers state that they are busy, but

SILK NOILS AND SILK NOIL YARNS
IN WHITE AND COLORS.
MOHAIR LOOPS, KNOTS, AND FANCY YARNS FOR DRESS GOODS AND CLOAKINGS.
A. T. SKERRY & CO., 47 LEONARD ST., NEW YORK.

QUEENSBURY MILLS,
FLYER SPUN



MOHAIR TOPS
AND YARNS FOR WEAVING.
LUSTRE YARNS
FOR SERGE LININGS.
Worcester, Mass.

CHENEY BROTHERS,

SILK MANUFACTURERS.

——ALL KINDS OF——

KNITTING SILKS, RIBBONS and PIECE GOODS

USED FOR TRIMMING KNIT GOODS.

TRAMS, ORGANZINES and SPUN SILKS, in the Hank, or on Cones, for Manufacturers' use. Silk for Special Purposes Made to Order.

Mills: SOUTH MANCHESTER AND HARTFORD, CONN.

SALESROOMS: 477, 479 and 481 Broome Street, NEW YORK.
929 Chestnut Street, PHILADELPHIA.
79 Chauncy Street, BOSTON.
239 Fifth Avenue, CHICAGO.

WILLIAM RYLE & CO.,

DEALERS IN

Domestic Thrown Silk of every description. Fine Pure Dye Silks for the woolen trade a specialty. Foreign and domestic

SPUN SILK YARNS AND NOILS

Importers of European and Asiatic Raw Silk.

54 Howard St., cor. Mercer St., - NEW YORK.

"Matthews" Fast Black Cotton Warps.

Warranted fast to acid, fulling, cross-dyeing and light; even and rich in color

Delivered on jack spools or section beams, all work guaranteed.

THE NEW ENGLAND WARP CO., - - New Haven, Conn

Correspondence solicited.

FIRE HOSE CORDS From long staple cotton—6s to 20s yarn in 2 to 100 ply—16 lbs. without a knot.

COTTON WARPS On beams—single or ply yarns, grey, bleached or colored.

GLAZED YARNS All plys—any color—for braiders, harness and sewing threads.

UNIVERSAL WIND For braider cops—warp yarns—grey or colored—2 inch to 12 inch traverse.

Dyeing facilities are new and best quality work guaranteed.
We are prepared to dye yarns for other parties.

WHITTIER MILLS, **Selling Office, Springfield, Mass.**
Mill, Chattahoochee, Ga.

can see the end of orders on hand and as they have yarn purchased to cover those orders will not purchase further until the new season is developed.

Orders have been placed for next season at an advance, but manufacturers state that the deliveries will not be required until December or January. On the other hand, one of the largest manufacturers in the country stated to writer that he was buying fine worsted yarn in large amounts and it was just his luck to have to buy on an advancing market, yet it is a fact that this same man was selling yarn at two cents per pound under what other spinners were selling.

The weaver of clay worsteds did not secure the business anticipated.

Preparations were made for a good run, but the business did not materialize and the yarn order was reduced.

The buying this season has been largely for cloth from woolen spun yarn which has caused the slight hesitancy of the men's wear weavers.

Much double and twist wool spun yarn has been used and much wool spun yarn has been used with worsted yarn for the warp.

Next season the weavers state the trade will be back again on straight worsted cloth.

The price of fine yarn is so high that weavers are making their best styles out of lower grade yarn. Instead of Australian yarn being used, half blood quality is being substituted. From the weavers' standpoint prices have reached the high mark and a reaction is hoped for.

While the men's wear mills are buying in a conservative manner, the dress goods manufacturers are busy and have placed many orders for 2/36 worsted yarn in 3/8 blood at prices about 75 cents per pound and some at 72 1/2 cents per pound. Top manufacturers selling fine tops on account of the high prices of fine wool have been forced to advance prices materially and in consequence are running slow on the fine grades, while on the lower grades the machinery is fully employed.

French spinners are running rather slack on account of the high cost of fine tops, and while they are anxious for business cannot break prices on account of the cost of wool.

Much merino worsted is being used. The market as a whole is in a healthy position, without much prospects for lower prices on yarn, although it is impossible to see how the manufacturers can stand a further advance.

We quote as follows:

2/40s Australian	1.12½
2/40s XX Delaine	1.01½
2/40s Half Blood	1.00

TRY OUR
Silkine also Lisle Silk
FINISH
For Hosiery, Knit Goods, Yarn, Fast Black, Harsh Colors and Fibres.
O. K. SOAP CO., 968 Franklin St., PHILA.

DEXTER YARN CO.
Cotton Yarns in Cops, Cones and Skeins; on Beams or Spools, Single and Twisted. Cable Cords and Twines.
PAWTUCKET, - R. I.

RICHARD CAMPION,
Selling Agent for—
Bristol Worsted Mills,
Highland Worsted Mills.
17 Bank Street, Philadelphia, Pa.

WOOLEN and MERINO
YARNS.
EATON RAPIDS WOOLEN MILLS,
Eaton Rapids, Mich.

Speed & Stephenson,
WORSTED and WOOLEN
YARNS
A SPECIALTY.
ALSO TOPS.
170 SUMMER ST., BOSTON.
Long Distance Tel. 4168-2 Main.

WOOLEN AND MERINO YARNS,
1 to 10 Runs, at reasonable prices.
All Wool, Mohair and Wool Spun or Mixed Cotton and Shoddy Yarns, in white, gray and colors.
Dress Goods Yarns a Specialty.
E. M. ROCKWELL,
Leominster, Mass.

J. BROADBENT & SONS,
WOOL SPUN YARNS.
YARNS FOR FLEECED LINED, and general Knit Goods our specialties. Equipment first-class. Prices low. Custom work of any kind. Get our figures.
UNIONVILLE, CONN.

SHODDY WM. H. H. SLACK & BRO.,
Springfield, Vt.
Carbonized Stock a Specialty. **FLOCKS**

M. B. SCHWAB, Pres. H. RAWITSER, Treas. ED. GLUECK, Sec. and Gen. Mgr.
RIVERDALE WOOLEN COMPANY,
MANUFACTURERS OF
SHODDIES OF EVERY DESCRIPTION.
CAPACITY 7,000,000 POUNDS PER ANNUM.
CUSTOM CARBONIZING AND GARNETTING A SPECIALTY.
RIVERDALE, NORTHBRIDGE, MASS. New York Office: 140 Duane Street.

2/20s Half Blood	.85
2/36s ⅜ Blood	.75
2/26s ¼ Blood	.68

Woolen Yarn.

Spinners who have customers are well employed on old work and are most of them running hard to fill orders with the prospects that the trade will continue well into next year. The business is almost wholly from the weaving trade and a variety of yarn is being made from a 1½ run to a 6 run for double and twist work.

Then again, elderdown knitters and weavers of French flannels are buying much woolen spun yarns. The rubber boot knitters are buying large quantities of cheap yarns. Some spinners just started, although running on full time, complain at the prices secured for spinning.

Again new mills are having hard work to find customers, but as a rule the spinners are busy. The knitters of hosiery are not buying at present as the woolen hosiery trade has not begun and these knitters are unwilling to buy large amounts of yarn on the present wool market without orders.

The chances are that they will buy from hand to mouth until a lower level is found for wool. With the present busy condition of the spinner this class of trade may find it hard to get the machinery which can take care of their requirements.

The knitters are busy and are using much wool and yarn. This business will continue throughout the season. The ribbed underwear manufacturers are doing well and are using much fine wool slubbing. The coming season will see much Australian thread waste used to take the place of Australian lamb's wool.

Rag and Shoddy Market.

Business in this market has pursued the even tenor of its way since our last report. The volume of business has been of moderate dimensions accompanied with an average stock on hand sufficient to supply the demand in most cases. This has prevented any sharp advance or decline. The usual contest between sellers and buyers has been in evidence and our quotations are based upon transactions rather than upon the extreme views of either side.

New clips are in good demand which has been well supplied by the clothiers who are now cutting off heavy weights in large quantities. Black worsteds are very scarce and the small lots coming to the market are quickly snatched up. The materials are now all light weights and this causes a temporary lull in the business of the shoddy men. Orders for heavy weight lines have already been placed in some cases but not to such an extent as to supply the loss of trade due to the light weight season.

We quote as follows:

SHODDIES AND EXTRACTS.

White yarn, best all wool	38-40
White knit, all wool, best, fine	28-32
White knit, No. 2	21-25
Light yarn, extra fine	25-28
New pure indigo blue	23-25
Fine worsted, new black	26
New blue clip, best, fine	20-22

WE BUY FOR SPOT CASH any Kind or Quantity Jobs of Woolens and Dress Goods. Seconds, Remnants, Odds and Ends a Specialty. **Drop us a line and we will call.**
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Telephone, Oxford 1431-2.

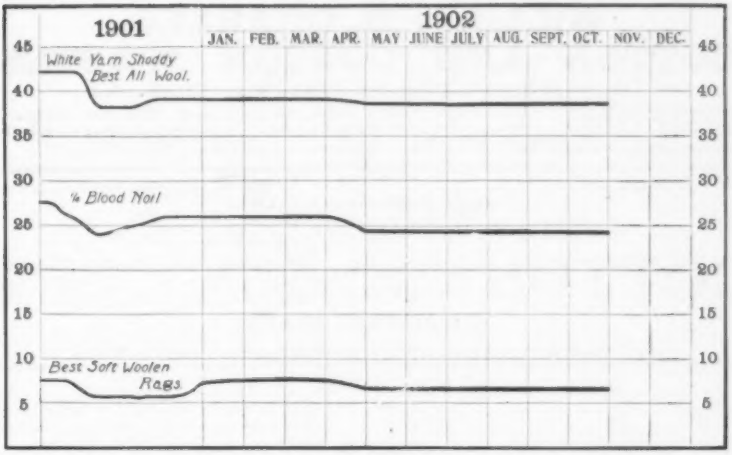

CHART SHOWING RANGE OF PRICES OF SHODDY, RAGS AND NOIL.

Dark mixed yarn, extra fine	22-24
All wool yarn, medium and coarse grades	15-20

Merino.

Fine light, all wool, No. 1	24-25
Medium light, all wool, No. 1	16½-17½
Medium light, all wool, No. 2	14-16
Fine black, all wool	20-22
Fine dark, all wool, best grade	19-20
Medium dark, all wool, No. 1	13-15
Medium dark, all wool, No. 2	12-13
Red knit stock, strictly all wool	19-20
Red flannel, all wool	19-20
Dark blue for hosiery, strictly all wool, No. 1	17-20
Dark blue for hosiery, not all wool, No. 2	12-14

DELAINE EXTRACTS.

Light	19-22
Medium light	15-17
Regular gray	12-13
Black	14-15
Fancy colors	16-20

WOOLEN RAGS.

Fine merchant tailors, all colors	10½-12
Choice light colors	13-15
Browns	12-13
Blacks	9½-10½
Fine blues, plain	11-12
Fine dark	10-11
Medium dark	7-8

Worsteds.

Blue	16-18
Black	21-23

Serges.

New blue	16-17
New black	15-16

Flannels.

New scarlet	18½-22
New blue	17-18
Cloakings	3-4

SOFTS AND KNIT STOCK.

Soft woolens, best	6-6½
Old white flannels	14-16
White flannels, No. 2	11-12
Old red flannels	9½-10
Light blue flannels	7½-9
Old blue flannels	6-7
Old plaids	5-7
White stockings	18-20
White hood stock	20-21
Clear hoods	9-10
Red stockings	9-10
Blue stockings	8-9
Fancy stockings, No. 1	7-9
Gray stockings	9-10
Black stockings	9-10
Knit stock comforters	6-7½
Red knit	9-10
Light gray knit	9-10
New light fancies	16-18
New fancies	12-14

Merinos.

Light, fine	14-15
Light, coarse	7-8
Fine dark	10½-12
Dark, No. 2	5-6½
Coarse dark	4-4½
Blue	10-11
Blue—seamed	14-15
Black—unseamed	10½-11½
New black	18-20
Small	3½-4
Bunting	6-8

FLOCKS.

Shear, fine white, all wool	9-11
Fine indigo blue, all wool	9-9½
Fine black, and blue, all wool	7-8
Fine dark, all wool	5-6
Gig, fine, all wool	3-4
No. 1, black, all wool cut	6-7
All wool, fancy, shear and gig	2½-3½

COTTON WASTE.

No. 1 Spinners	7¾
No. 1 Machine	5-5½
No. 2 Machine	4½-5
Machine Cop	5½-6
No. 1 Cop	6
No. 1 Card	6½-7
No. 2 Card	4
No. 1 Oily Card	3-3½
No. 2, Oily Card	2-2½
Egyptian Card	7¼-7½
Peeler Combing	8-8¼
Egyptian Combing	7¾-8
No. 1 Linters	3¼-4½
No. 2 Linters	3-3½
White Clips	5-5½
Colored Clips	2½-4½
No. 1 Picker	1¾-2½

NOILS.

Australian	48-50
Fine domestic	38-40
½ Blood	24-28

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Cotton Waste Purchased on Yearly Contract from Mills.

¾ Blood	22-23
¼ Blood	17-19
Braid	21-22
Carpet (white)	14-18
Carpet (colored)	10-12½
Seedy.	
½ Blood	35-37
⅜ Blood	27-30
¼ Blood	23-26

Textile Patents.

(Continued from page 871)

Loose Reed Motion for Looms. 710,192. Eduard Herzig, Union Hill, N. J.

Loom. 710,458. Adam S. Horlacher, Indianapolis, Ind.

Loom-Jacquard. 711,499. Gustave Hove, Belfast, Ireland.

Manufacture of Filaments from Cellulose Solution. 710,819. Edmund Thiele, Barmen, Germany.

Mechanism for Controlling Looms by the Quantity of Weft in the Shuttles. 709,910. J. H. Kierx, Sunbury, Pa., assignor to Susquehanna Silk Mills, Sunbury, Pa.

Mechanism for Controlling Looms by the Quantity of Weft in the Shuttles. 709,911. J. H. Kierk, Sunbury, Pa., assignor to Susquehanna Silk Mills, Sunbury, Pa.

Mechanism for Truing Spinning Rings. 709,512. Chas. F. Roper, Hopedale, Mass., assignor of one-half to Draper Co., Hopedale Mass.

Picker Stick for Looms. 710,827. Henry Wilde and Joseph W. Lee, New London, Conn.

Picker Staff Check for Looms. 711,092. R. & W., Riding, New Bedford, Mass., and F. P. King, Fairhaven, Mass.

Rib Knitting Machine. 709,829. R. W. Scott, Philadelphia, Pa.

Ribbed Knitted Fabric. 709,828. R. W. Scott, Philadelphia, Pa., assignor of one-half to L. N. D. Williams, Ashbourne, Pa.

Ribbed Knitted Fabric. 709,826. R. W. Scott, Philadelphia, Pa., assignor of one-half to L. N. D. Williams, Ashbourne, Pa.

Sewed Warp Fabric. 711,898. John W. Hyatt, Newark, N. J.

Shedding Mechanism for Looms. 711,391. Arthur C. Fischer, So. Bethlehem, Pa.

Treatment of Ramie, China-Grass or other Fibrous Material. 711,577. Casimir Masse. Rantigny, France, assignor of one-half to La Societe Francaise de Ramie, Paris, France.

Take Up Mechanism for Looms. 709,582. Gustave Schmidt, Sr., Colmar, Germany.

Thread Parter for Filling Replenishing Looms. 711,737. Chas. F. Roper, Hopedale, Mass., assignor of one-half to the Draper Co., Hopedale, Mass.

Woven Fabric. 710,775. Harry Hardwick, Philadelphia, Pa., assignor to Iver, Dietz & Metzger Co., Philadelphia, Pa.

Weft Stop Motion for Looms. 710,787. George Fair, Salem, Mass., assignor of one-half to Edwin W. Gay, Newton, Mass.

Woven Feather Fabric. 709,620. E. K. Warren and J. H. Holden, Three Oaks, Michigan.

Woven Feather Fabric. 709,621. E. K. Warren and J. H. Holden, Three Oaks, Michigan.

Woven Feather Fabric. 709,622. E. K. Warren and J. H. Holden, Three Oaks, Michigan.

Weft Replenishing Mechanism for Looms. 710,379. R. Talbott and W. Rossetter, Blackburn, Eng., assignors to Blackburn Loom and Weaving Machinery Making Co., Blackburn, Eng.

English Consuls on the Alert.

The American consul, with his important markets for blue-eyed pigs or some other fanciful product, we know very well; but the British consul at Wuchow runs him very close. He says: "Amongst other things it is interesting to note teething powder and feeding bottles, for which, considering the enormous production of babies in this country, there ought to be a good opening." Continuing, he says that sewing machines are coming into use both in private houses and tailoring establishments; and as an instance of how rapidly the Chinese acquire a taste for things previously unknown to them he mentions that Hong-Kong aerated waters at 20c. a bottle are sold in the streets of Kuellin, the provincial capital, which is twelve days' journey from the nearest treaty port and where foreigners are scarcely ever seen. —Commercial Intelligence.

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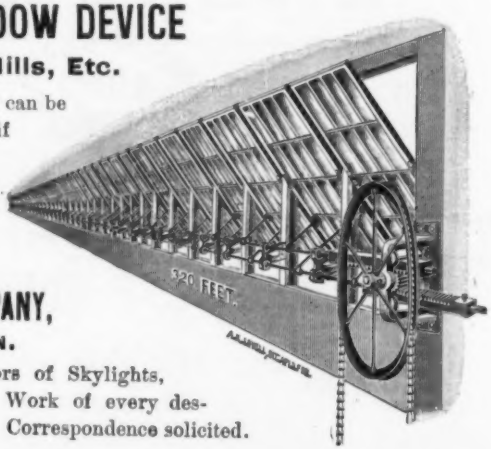

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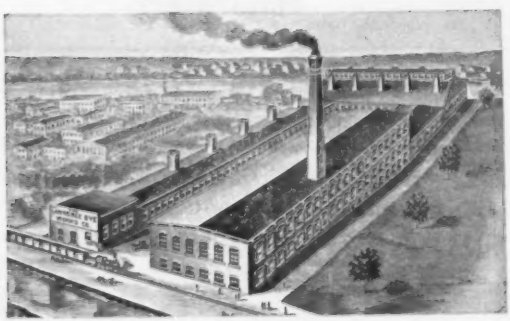

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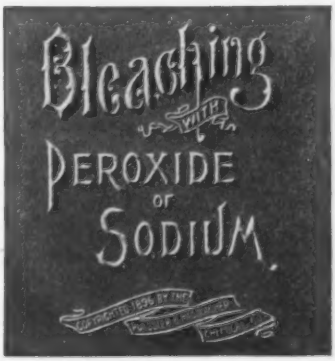

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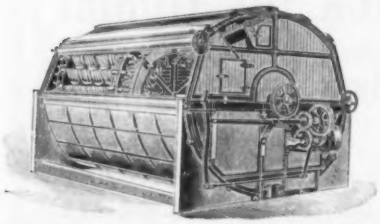

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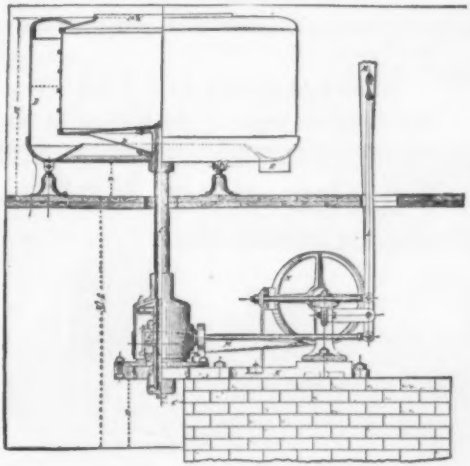

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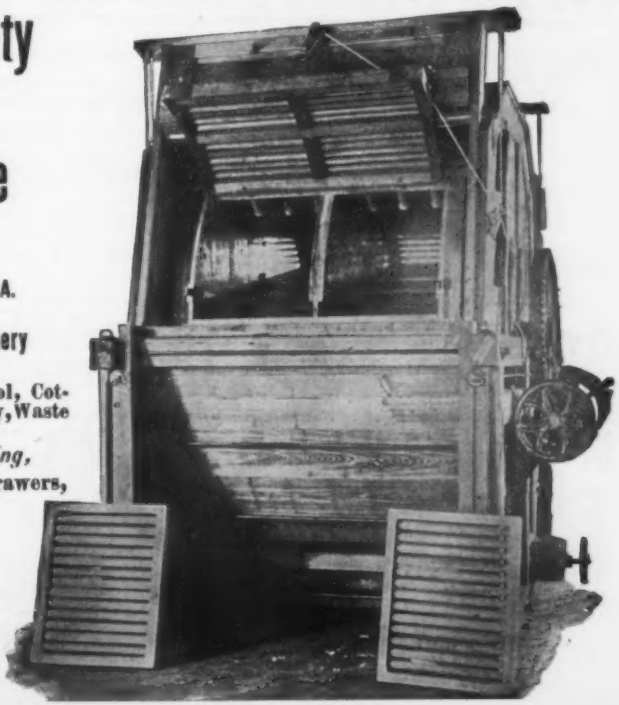

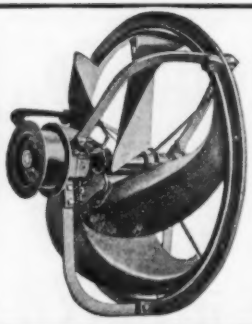

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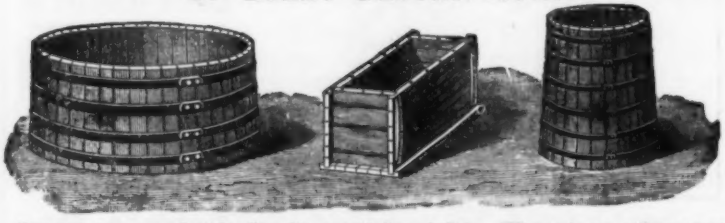

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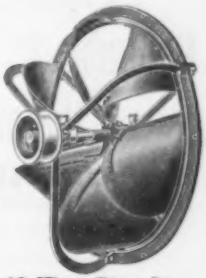

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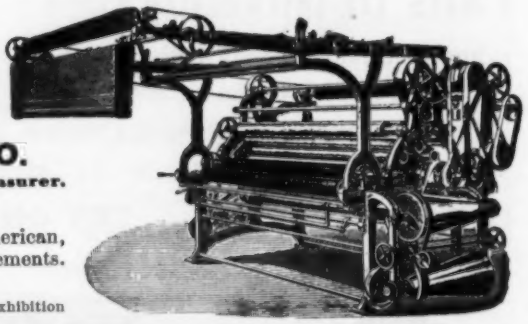

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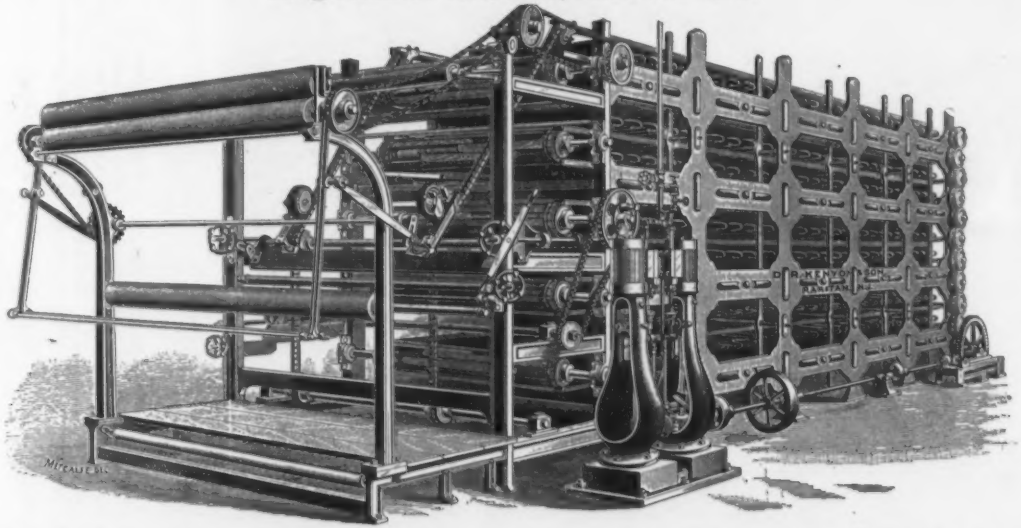

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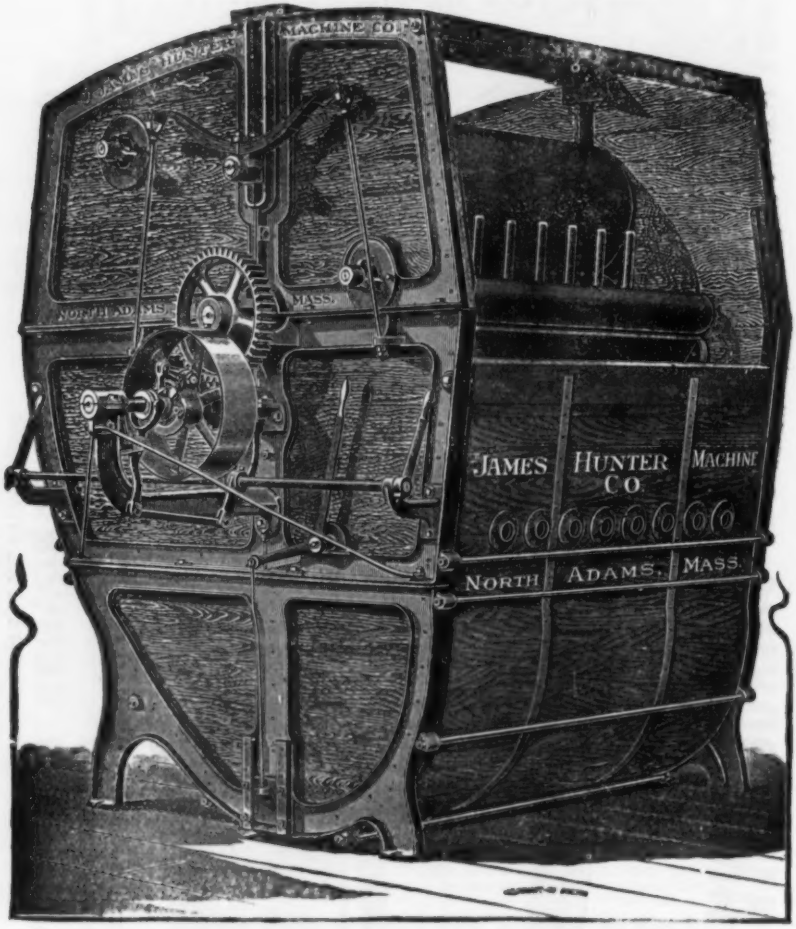

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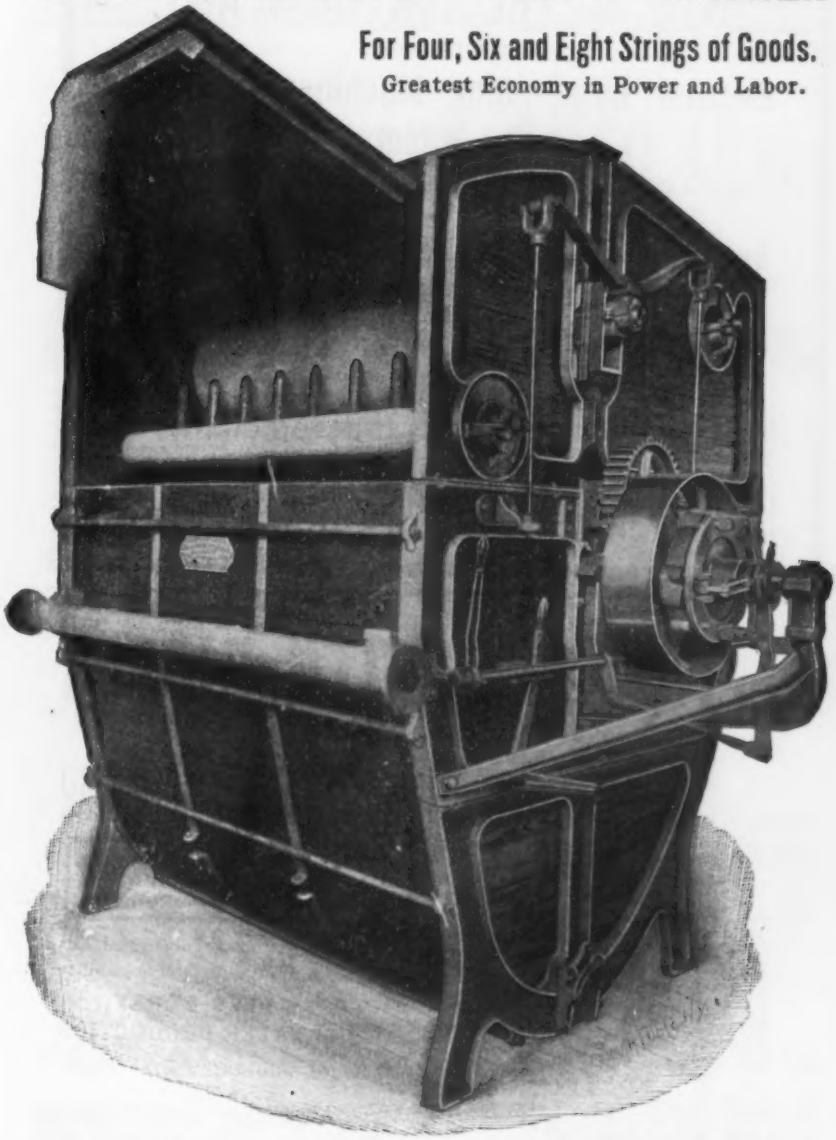

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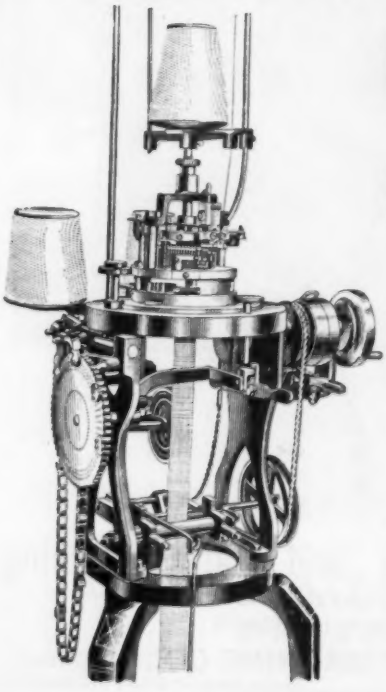

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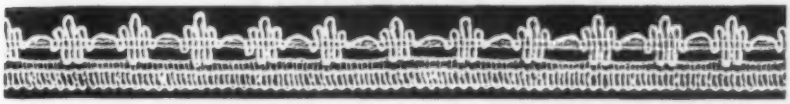

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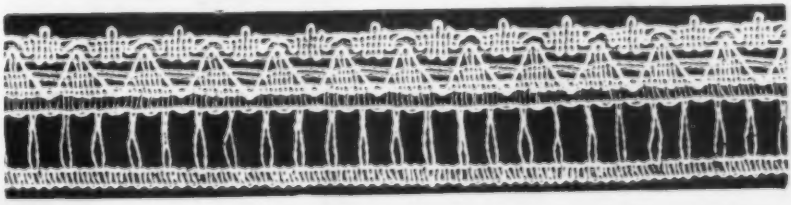

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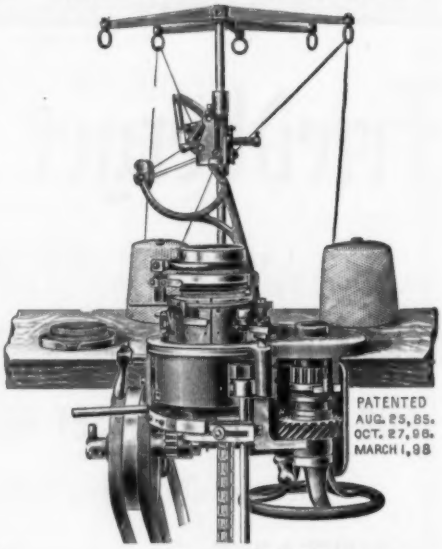

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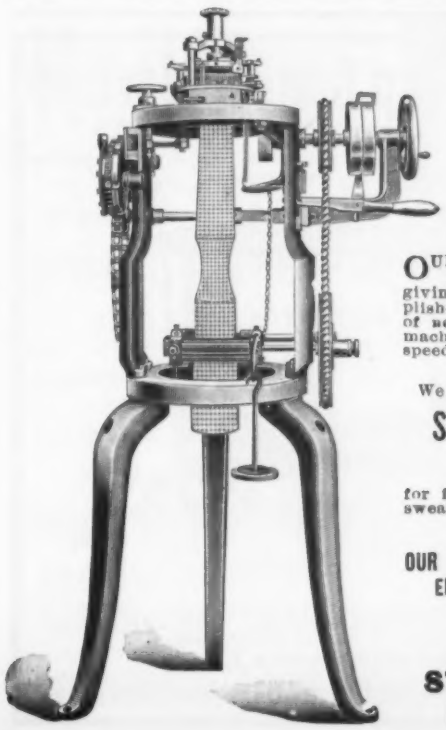

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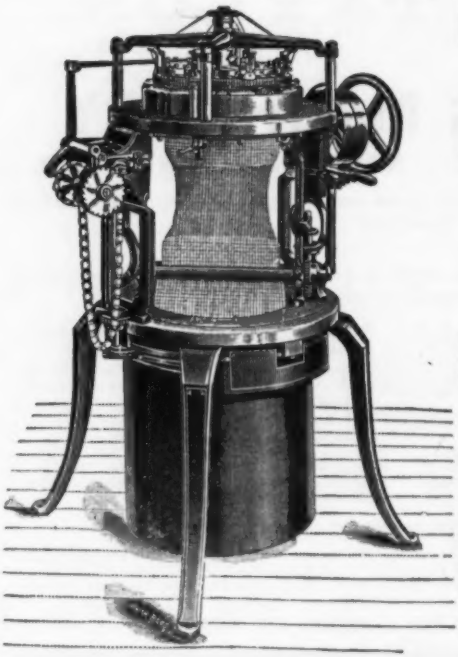

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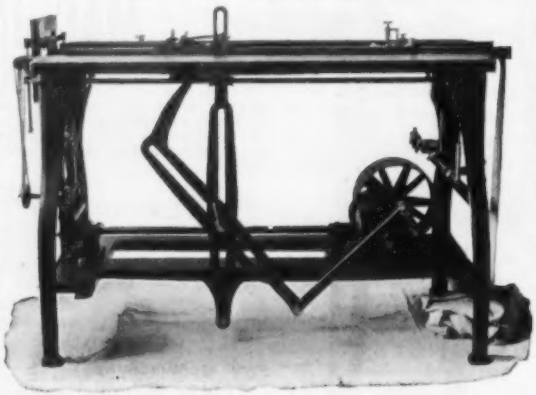

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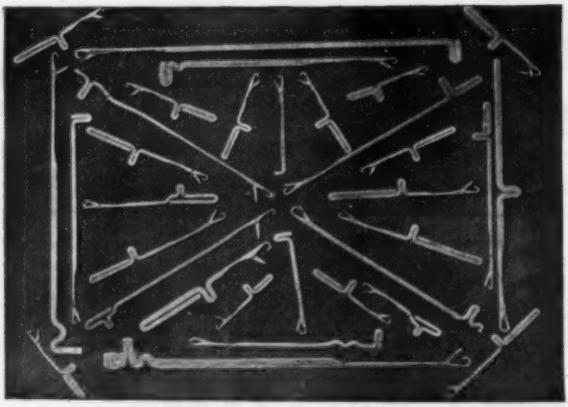

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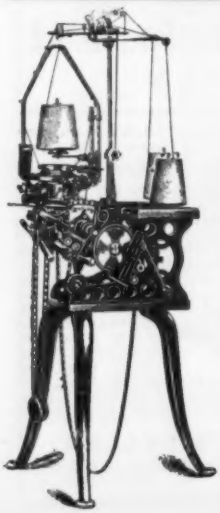

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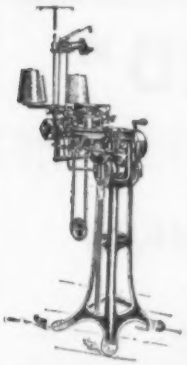
Excelsior Knitting Machine Mfg. Co.

ALLENTOWN, PA., U. S. A.

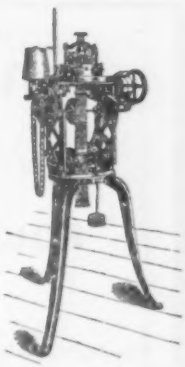


H. BRINTON & CO.,

213-215 Race Street,
Philadelphia, Pa.

BUILDERS OF

Full Automatic Seamless and Ribbed



Knitting Machinery.

LACINGS For Overshirts and Underwear.

Tipped and Tasseled.

HEPNER & HORWITZ. 30 Howard St. N.Y.

Celebrated Brand PYRAMID TRADE MARK Lacings

For Underwear, Overshirts and Sweaters,

JOHN CATHCART & CO.,
115 Franklin St., New York.

GERMAN KNITTING MACHINERY

—FOR—

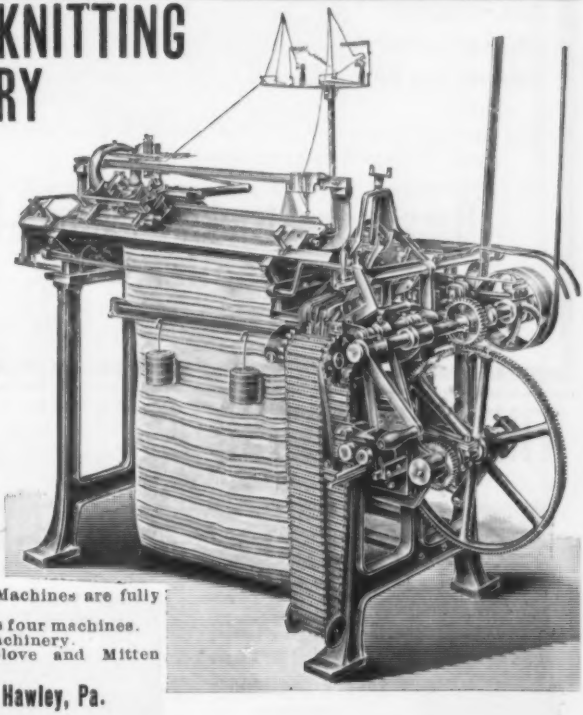
Fancy and Full Fashioned Goods.

Our Specialties are for Machines for Knitting

Sweaters,
Golf Jackets,
Fancy Vests, etc.

—IN—

Plain, Honeycombed and Other Fancy Stitches.



Our Steam Power Machines are fully Automatic.
One operator attends four machines.
Also Hand Power Machinery.
Also Underwear, Glove and Mitten Machinery.

E. H. LUDWIG, Hawley, Pa.

The "RECORD"

is the latest improved full automatic knitting machine (combined Cotton and flat) for

FULL FASHIONED HOSIERY

with double heel.

The "RECORD" operates upon an entirely new principle.

The "RECORD" runs 100 turns per minute.

The "Record" produces a fabric with a stitch of absolute regularity.

The "Record" narrows automatically upon a new principle.

The "Record" breaks no needles.

The "Record" finishes the flat circular work with a double heel fashioned on the machine without any hand work before or after.

The "RECORD" turns out a heretofore unknown daily production.

The "RECORD" has needle plates of fine gauges with clock-spring steel ribs, which are removable and exchangeable.

The "RECORD" handles the most tender yarn.

The "RECORD" knits automatically any desired fashioned articles, besides hosiery.

The "RECORD" is built with 2, 4, 6, 8, 10 or 12 heads working together (combined.)

The class of goods made on these machines is in great demand and shows a good profit. Write for further particulars and prices.

Dresdner Strickmaschinen-Fabrik,

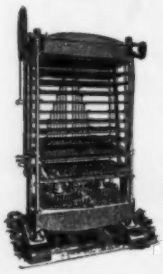
IRMSCHER & CO.,

Loebtau-Dresden, Germany.

THE CRAWFORD

HOLLOW STEAM

Plate Press



For Knit or Woolen Goods.

The most reliable machine of the kind on the market.

Press Papers & Fenders

SPENCE & RIDEOUT,

Successors to

J. J. CRAWFORD & SON,

Nashua, N. H.

LEWIS JONES,

60½ and Media Sts, Philadelphia

GAS ENGINES for city or country. | EFFICIENT

BRUSHING MACHINERY | DURABLE

KNITTING MACHINERY | LOW IN PRICE.

WILFRED WELLS,

SOLE MANUFACTURER OF THE

CHAMPION HOSIERY STAMP.

PATENTED JANUARY 7, 1890.

The only Perfect Stamp for Hosiery, Underwear and all Woven Fabrics.

Blocks for Printing Hosiery.

505 W. LEHIGH AVE., PHILA., PA.

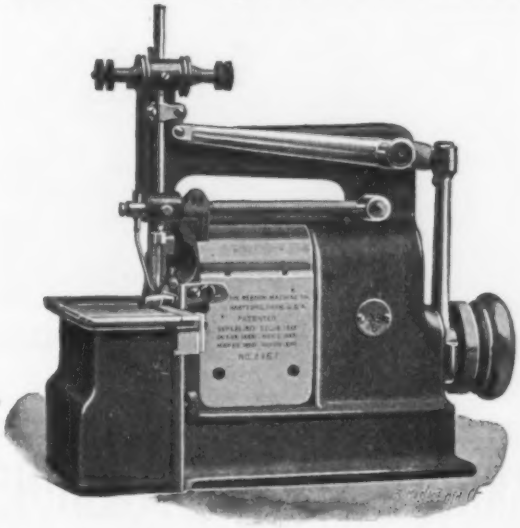
THE CHEAPEST AND BEST METHOD

—: OF :—

FINISHING RIBBED KNIT GOODS

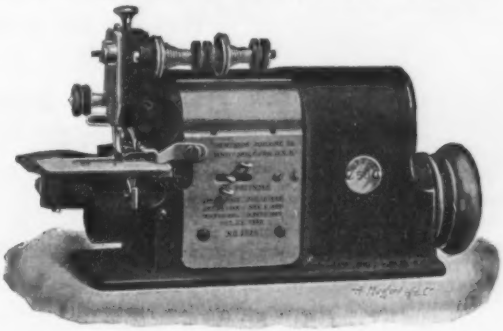
IS BY THE USE OF

Our High Speed Machines.



Blankets, Skirts or Cotton Goods,

requiring a useful and Ornamental Finish, should be finished by some of our various machines adapted for special purposes and finishes.



Send for Catalogue and Samples, stating the kind of goods to be finished.

THE MERROW MACHINE CO.,

346 Broadway, New York. **Hartford, Conn.** Bourse Building, Philadelphia.

TRADE MARK.

WILLCOX & GIBBS

"OVERLOCK" MACHINE.

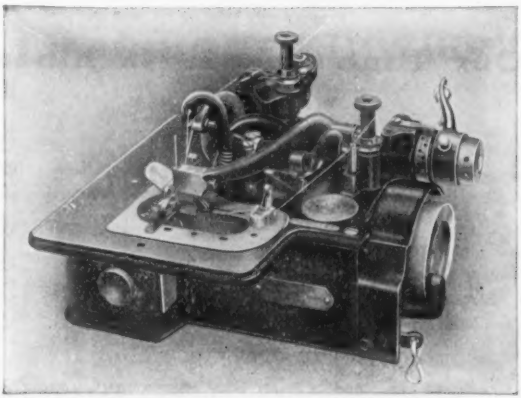
(TRADE MARK.) (Pat. Apr. 5, 1892.)
(Patent twice upheld by U. S. Court of Appeals.)

For TRIMMING, SEAMING, and OVEREDGING (or HEMMING) KNIT UNDERWEAR.

Business est. in 1859.

3,000 STITCHES PER MINUTE

12 to 20 STITCHES PER INCH



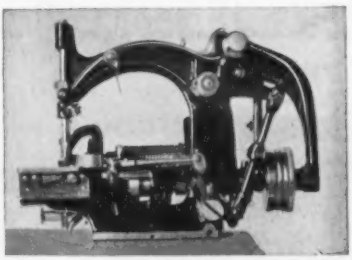
The "Overlock" Elastic Stitch is equal to the full stretch of the Goods

WILLCOX & GIBBS SEWING MACHINE CO.,
658 BROADWAY, NEW YORK CITY.

LONDON PARIS MILAN DRESDEN

THE ARNOLD SEWING MACHINE CO.

216 High Street, Newark, New Jersey.



Overedge Welting Machine, with Trimmer.
The very best in the market.
(No royalty.)

Overedge Seaming Machine, with Trimmer.
3000 stitches per minute.
(No royalty.)

Overedge Sewing Machine, without Trimmer.
For manufacturers of knit goods and other fabrics, with or without trimmers.

Our claims are SIMPLICITY,
DURABILITY,
ACCESSIBILITY,

Every part of our machine being readily accessible.
This machine has 100 less parts than any other overedge machine.

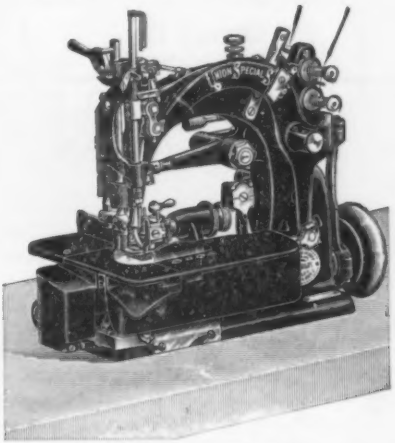
UNION SPECIAL

SINGLE "INTERLOCK" MACHINES

(TRADE MARK.)

With Trimmer, for Underwear and Hosiery, Overedging, Hemming and Seaming.

Elastic Seam,
High Speed,
Durable,
Simple,
No Royalty.



Send for Samples of its Work.

For Underwear.

Special Machine for Hosiery.

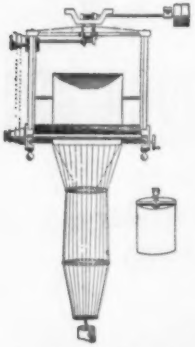
Better Work,
Uniform,
Width of Hem,
Only Machine Having Horn.

More Work,
Easier to Operate,
Raw Edge Covered.

For Hosiery.

Union Special Sewing Machine Co.

75 Kinzie St., Chicago.
47 Leonard St., New York.
228 Market St., Phila.
96 South St., Boston.
12 Church St., Amsterdam, N. Y.
60 Mohawk St., Cohoes, N.Y.
708 Main St,, Cincinnati.
1230 Olive St., St. Louis.



THE PRESIDENT

of one of the largest knitting mills said to me the other day:

"Mr. Antisdel, you have without doubt the best dryer made for tubular knit goods, and sooner or later all the mills will have them. They cannot afford any other."

The sales of my dryer for the past few months convince me that knitting manufacturers are beginning to realize that my dryer has no equal in the market.

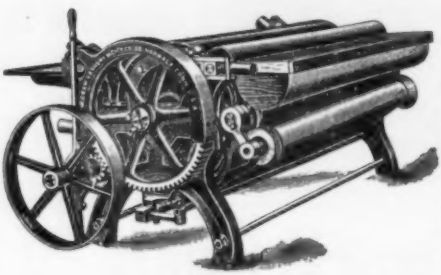
Sole Owner and Manufacturer

E. M. ANTISDEL,

20 Broad St., UTICA, N. Y.

(Adv. changed every month.)

AUTOMATIC IRONING AND PRESSING MACHINE FOR KNIT GOODS.



This machine irons and presses ribbed and flat underwear, giving a fine smooth finish and most attractive appearance to the goods, not to be obtained in any other way. It does not break buttons. Inexpensive and easy to operate, and has large capacity. Knitting mills using them are greatly pleased with results. This method of finishing is sure to come into universal use. Send for further particulars to

J. W. CRAW LAUNDRY MACHINERY CO.,

SOUTH NORWALK, CONN.

THE LAMB

LEADER OF KNITTERS

ORIGINAL and BEST
PARTS INTERCHANGABLE
EASILY and QUICKLY OBTAINED

Hosiery and Sweater
Cardigan Jacket
Automatic Racked Border
Full Fashioned Union Suit

MACHINES

LAMB KNITTING MACHINE CO.,

CHICOPEE FALLS, - - MASS.

J. E. WOODHEAD, 100 22nd Street, CHICAGO.

L. D. SANBORN, 505 Wool Exchange, NEW YORK.

CRANE MFG CO

LAKEPORT, N. H.

Spring Needle Circular Knitting Machine

For Hosiery, Shirts, Drawers, Jersey Cloth and Stockinet.

A Specialty of Hardened Bladed Burr Wheels with Self-Oiling Brackets.

THE ONLY

SEAMLESS MILL BASKET,

M'f'd by CRANE BROS., Westfield, Mass.

Send for Price List.

SHEARS for finishing Cotton, Wool or Worsted Fabrics made in single sets or in several sets to finish face and back at one feed, saving space, time, cost. The Combined Shear and Roller for Carpets is an example. Baling and Finishing Presses, Presses for Straw, Felt and Buckram Hats. Shafting, Gearing. We grind or repair all makes of Shears. HOWARD FOUNDRY & MACH. WKS., Lansdowne, Delaware Co., Pa.

A NEW TRIMMING DEVICE

FOR UNION BUTTON SEWING MACHINES.

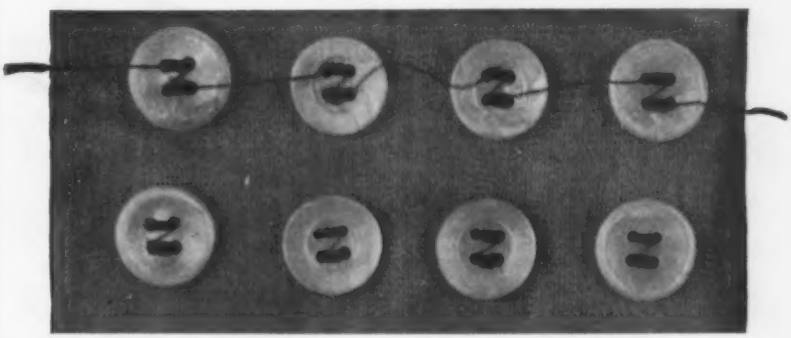
The new Thread Trimming Device trims both upper and lower threads, leaves the stitching on top of the button with a smooth finish, without any ragged ends, secures the ends of both threads, makes next stitch perfect.

CAN BE APPLIED TO EVERY UNION BUTTON SEWING MACHINE.

Write for full particulars to

THE UNION BUTTON SEWING MACHINE CO.,

164 High St., Boston, Mass.



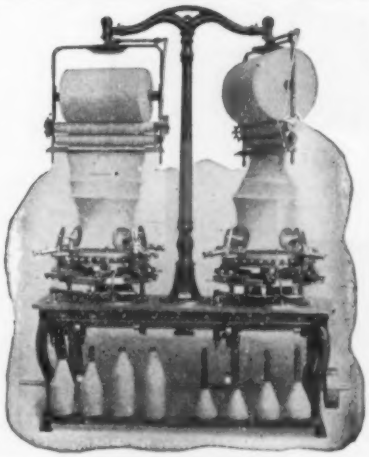
☞ Upper row shows buttons sewed on by Union Machine *without* the Thread Trimming Device. Lower row shows buttons sewed on by Union Machine with Thread Trimming Device attached.

CHARLES COOPER, BENNINCTON, VT.,

KNITTING MACHINE AND NEEDLE WORKS,

MANUFACTURER OF

Flat Rib Knitting Machines, 2 to 5 sections, Spring and Latch Knitting Needles, Burr Wheels, Burr Blades, Collarette Attachments, etc., etc. All the latest improvements. Sinkers and all Rib Machinery supplies. Patent Springs for Dyeing Boards. Also Ribbed Anklets made to order. Branch Shop, AMSTERDAM, N. Y.



TOMPKINS BROS. Troy, N.Y.
Knitters, Winders, Burrs, Attachments.

BEATTIES' Patent Loopers.

Wm. Beattie & Son,
COHOES, N. Y.
An Illustrated Catalogue will be sent on application.

CIRCULAR AUTOMATIC RIB KNITTING MACHINERY FOR

Combination Suits,
Sweaters,
Richelieu Ribs,
Cuffs,
Ribbed Shirts,
Shaped Swiss Ribs,
Rib Tails, etc.

Over 1200 machines now in operation.

Also manufacturers of **COP WINDERS.**

The HOMER P. SNYDER MFG. CO.,
LITTLE FALLS, N. Y.

Striping Attachments
FOR
Latch and Spring Needle Knitting Machines.

These Stripers are being rapidly adopted by representative mills, among whom may be mentioned:

Whitman Bros. and Gilbert Knitting Co., Little Falls, N. Y.; Commercial Mills, Troy; R. Forbes Co., Hespeler, Ont.; Hygienic Underwear Co., Phila.; Gantner & Mattern, San Francisco; Gonzales Mill, Mexico.

Send for Particulars.

BABCOCK MACHINE WORKS,
Fort Plain, N. Y.

We make the best in
QUALITY
COLORING
ARTISTIC EFFECT

HOSIERY BANDS AND LABELS

We carry all the "Specials."

Write for our book and samples.

DOCKER-FOSTER CO.
123 & 125 N. FIFTH STREET,
PHILADELPHIA.

WM. COREY CO.,
Manufacturers of Knitting Machine
Latch Needles,
MANCHESTER, N. H.

Keystone Knitting Machine Manufacturing Company.
Manufacturers of Knitting Machine
NEEDLES
Looper Needles, Automatic Knitters, Ribbers, etc.
40 NORTH 7th ST., PHILA., PA.

PACE NEEDLE CO.,
Manufacturers of
LATCH NEEDLES
of all kinds. Warranted in every respect.
CHICOPEE FALLS, MASS.
Agents: J. E. Woodhead, 100 Twenty-second Street, Chicago, Ill. Durbrow & Hearne Mfg. Co., 12 Wooster Street, New York. James Taylor, 835 Arch Street, Philadelphia, Pa.

Excelsior NEEDLES
The best hosiery needle in the market.
Manufactured by
Wardwell Needle Co., Lakeport, N. H.

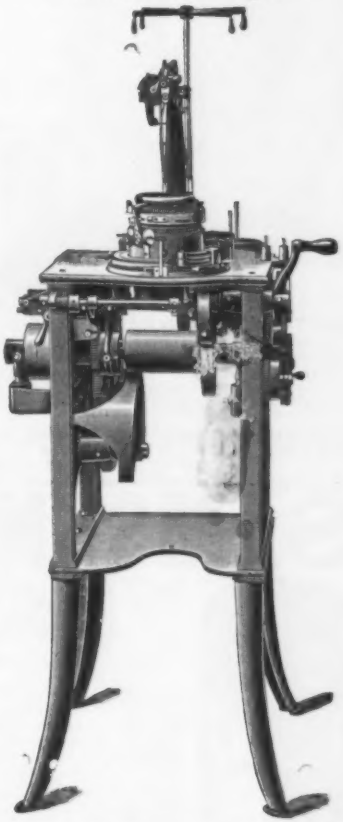
ORION TREAT,
MANUFACTURER OF
SCREW RIVETED BALMORAL AND DOUBLE RIB NEEDLES.
(Patented May 6, 1890.)
Manchester Green, - Conn
All work guaranteed.

Wm. Breedon's Son,
Manufacturers of
Spring Knitting Needles,
And Burr Blades of all kinds.
Amsterdam, N. Y.

LOYAL T. IVES,
MANUFACTURER OF ALL KINDS OF
Spring Knitting Needles
NEW BRUNSWICK. N. J.

THE MANUFACTURERS' SUPPLIES CO.,
418 Arch St., Philadelphia, Pa.
Standard Knitting Machine Needles,
And all kinds of Sewing Machine Needles.
Parts for Wilcox & Gibbs Mfg., and all Sewing Machines
Oils, Beltings and General Mill Supplies.
Agents for Excelsior Needle Co., and National Needle Co.

ACME
Automatic Knitter,
FOR SEAMLESS HOSIERY.
All Kinds and Gauges.



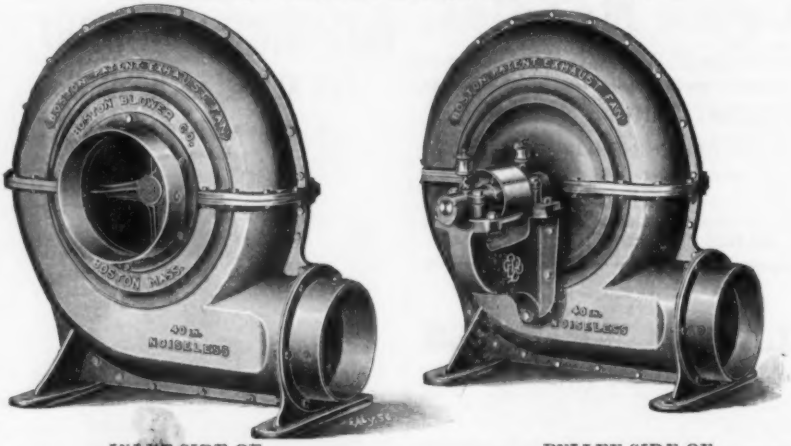
Best method of transferring ribbed legs and tops.

Greatest production of perfect work at least expense.

For particulars address
Mayo Knitting Machine & Needle Company,
FRANKLIN FALLS, N. H.
Philadelphia Office:
Knickerbocker Building,
Cor. 6th and Arch Sts.

Boston Wool Exhausters, with Removable Tops

As used in Connection with Pneumatic Conveyor System for Handling Wool, Cotton, Rags, Excelsior, Jute, Etc.



INLET SIDE OF RIGHT HAND WOOL EXHAUSTER.

PULLEY SIDE OF LEFT HAND WOOL EXHAUSTER

This machine is similar in design to the regular Boston Patent Exhaust Fan, but is fitted with a special wheel for handling fibrous materials, and the top is removable.

This latter feature is especially desirable when handling wet or greasy materials or in handling anything in fact, which would leave a deposit on the inside of fan, as the entire top may readily be removed for inspection or cleaning without disconnecting either pipe or belt connections.

BOSTON BLOWER CO., Main Office and Works: **Business and Glenwood Sts., HYDE PARK, MASS.**

SAMSON TURBINE

For Heads of **3** Feet and Upwards.

UPRIGHT AND HORIZONTAL.

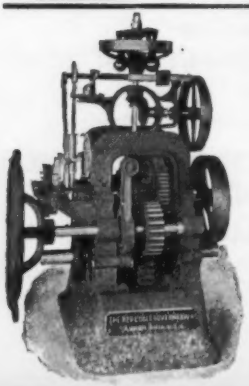
ADAPTED TO ANY AND ALL SITUATIONS.

SPECIAL FEATURES:

High Speed, combined with **efficiency. Balanced Gate,** easily regulated by Governor. **Close regulation** and **steady motion.** Concentration of **great power in limited space,** requiring small penstock room. **Great strength,** and with a number of patented features. Special attention given to designing for difficult situations.

Write for pamphlet stating your Head and Power required.

JAMES LEFFEL & CO., Springfield, O., U.S.A.



Waterwheel Governors

.. .. FOR .. ..

TEXTILE MILLS,

ELECTRIC LIGHT, POWER & RAILROAD WORK.

We are now prepared to **guarantee absolute satisfaction.** Write for references in your locality.

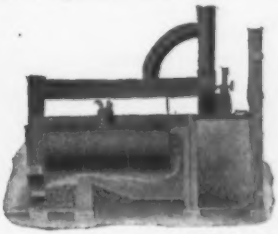
The Replogle Governor Works,

BROADWAY AND CHESTNUT STS., AKRON, OHIO.

A B C

From a Purely Business Standpoint

Our system of Mechanical Draft should appeal to every live business man who maintains any sort of Power Supply Plant requiring the consumption of fuel. The



"A B C" System of Mechanical Draft

is the solution of correct and saving boiler service. It is not only less expensive in its initial cost than the old fashioned chimney or stack, but saves in the quality and quantity of fuel required.

Send for Catalogue, 118 G.

AMERICAN BLOWER CO.,

DETROIT, MICH.

NEW YORK. CHICAGO. LONDON.

L.L.CLINE

SECURITY

THE LOCKE EMERGENCY OR Automatic Safety Shut-off Valve.

This is the only automatic valve that has saved human life in two of the largest mills in this country

THE AMOSKEAG AND THE FALL RIVER MFG. CO.

This valve acts as an engine stop and will close instantly whenever a break occurs in the steam main or engine. It can also be closed from any part of the mill by pressing an electric button.

SEND FOR PARTICULARS.

CERTAINTY OF ACTION

LOCKE REGULATOR CO

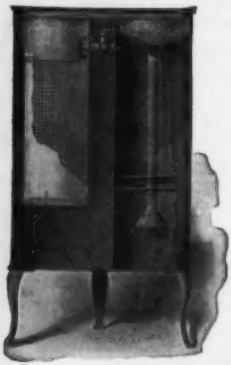
SALEM MASS

QUICKNESS OF OPERATION

NOV 15 1902

The Filtering Cylinder and EVERY PART of the

WHITE STAR OIL FILTER



May be quickly and easily removed and cleaned, enabling it to be always kept in perfect filtering condition. In this essential feature of a perfect and complete filter, the **White Star** is not even approached by any other device.

We have published a beautiful booklet, "H," containing numerous halftones, showing the entire filtering operation and process of cleaning, and giving full information. Send for it and learn all about a perfect and practical filter.

"Since receiving the Filter from you Jan. 15th, '02, we have saved 364 gals. of oil, which amounts to $54.60.

O. J. BEAUDETTE & CO.,
Pontiac, Mich.

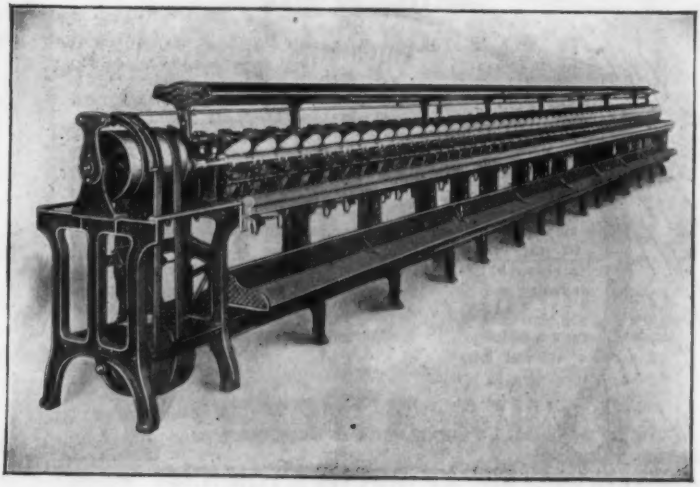
PITTSBURGH GAGE & SUPPLY CO.,
PITTSBURGH, PA.

Eastern Office: 1011 Girard Trust Bldg., Philadelphia.
New York: 136 Liberty St., J. R. Vandyck Co.
London; 40 Wilson St., Finsbury, The Vulite Syndicate, Ltd.

OIL FILTRATION EXPERTS.

FOSTER MACHINE CO.

WESTFIELD, MASS.



Latest Cone and Tube Cross Winder for Cotton, Woolen and Worsted.

Patented in United States and Europe.

Gives more production per operator than any other winder on the market. Even tension and speed. Yarn delivers direct from Cones to knitting machines without rewinding

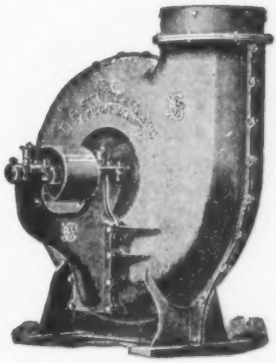
Reduce the Expense

of conveying

Cotton and Wool

by using the

Sturtevant Blower System.



Cleans the Stock in the Opening Process. Reduces time of drying by one-half as result of handling from picker or dyehouse to dry-room, and leaves it in better condition for carding.

B. F. STURTEVANT CO., BOSTON.

NEW YORK. PHILADELPHIA. CHICAGO. LONDON.

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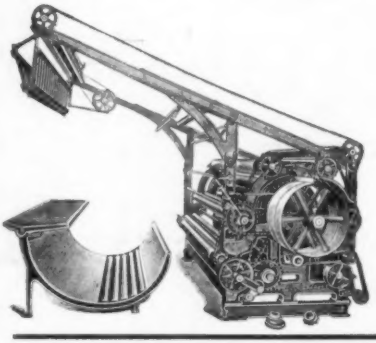
GEISENHEIMER & CO.
189 Front St., New York.
Branch Offices: K. OEHLER'S
19 Pearl Street, Boston.
31 South Front St., Philadelphia.

ANILINE COLORS, ANILINE SALT,
BLOOD ALBUMEN,
DYE STUFFS, DYE-WOOD EXTRACTS.

JENKINS '96 SHEET PACKING.

Makes perfect joint instantly; does not have to be followed up. Makes joint that will last for years on all pressures of steam, oils, acids, etc. Does not rot, burn, blow or squeeze out. Received the Highest Award —GOLD MEDAL—at the Pan-American Exposition. If you are having trouble with Joint Packing, send to us for a sample of Jenkins '96. JENKINS BROTHERS, New York, Boston, Philadelphia, Chicago.

'96 '96



16 WORKERS
WOOLEN NAPPER
Energies, contacts and cloth feed all adjustable.
Lots of Brushing.
Parks & Woolson Machine Co.
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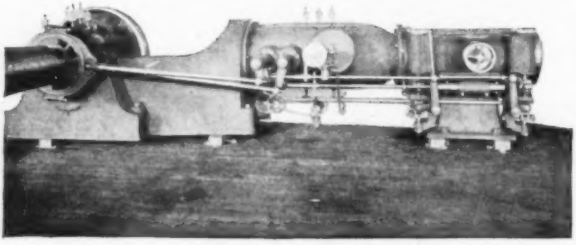

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